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### BLOOD GROUPS, SUB-GROUPS, M, N TYPES AND THE RH FACTOR IN FIJIAN.

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THE results of previous surveys dealing with blood groups, sub-groups, M, N types and the Rh factor in Australian aborigines (Wilson, Graydon, Simmons and Bryce, 1944; and Simmons, Graydon and Hamilton, 1944) were so interesting that we decided to test, if possible, blood samples from representatives of the native races of Indonesia, Melanesia and Polynesia to obtain a more complete blood picture of each race for comparison with that of Australian aborigines and with each other. We have obtained an excellent sampling of the Indonesians, the Papuans and also the Maoris, and the reports are now being prepared for publication. These reports, which should be of value in the study of racial origins, have a greater war-time value, in that all the peoples concerned are engaged directly or indirectly in the present conflict.

The colony of Fiji, which consists of many islands, the chief and largest of which are Viti Levu and Vanua Levu, is regarded as being within the boundary of Melanesia.

The Fijians have been the subject of much anthropological discussion, and Howells (1933) makes the following statement:

It is noticed that in several measurements (stature, head length and breadth, and face width) the Fijians stand actually among the Polynesian groups, rather than below them, on the Melanesian side. This is true also of the cephalic index. Now, there appears in the measurements a distinct tendency for Hawaii and the Society Islands on the one hand, and Tonga and Samoa on the other to pair themselves off metrically, the latter pair being taller and more dolichocephalic with longer faces. In stature and head measurements it is this pair which the Fijians approximate

and which seems on the whole most closely related. (In face length and nose diameters, as we have shown, the Fijians are intermediate between Polynesians and Melanesians, or among the latter.) In spite of certain cultural associations between Fiji and New Zealand, the Maori do not meet the requirements of parenthood on several counts.

Howells discusses at some length the possible movements of the early Polynesian people and the schemes put forward by others who have made a close study of the available anthropological data for this area.

The only results of blood group investigations for the Fijians available to anthropologists are those of Moss reported by Howells (1933). Moss grouped the blood of 160 Fijians; 43.8% were of group O, 43.1% of group A, 9.4% of group B, and 3.8% of group AB. Of this group, 133 were men, aged eighteen years and over, collected at the Methodist Mission on the Rewa River in Viti Levu, and they came mainly from the interior of the island. No information has been published for these people concerning the sub-groups of A, the M, N types or the Rh factor. The purpose of this paper is to report our blood findings on a representative sampling of 200 pure-blooded Fijians, in the hope that the work will be of some value to anthropologists in determining the precise classification of the Fijian.

#### Materials and Methods.

The blood samples were collected in Suva from 200 members of the Fiji Military Forces by one of us (G.B.), who was responsible for the selection of pure-blooded Fijians. The Fijians from whom blood samples were taken were all males, mostly between the ages of twenty and thirty years, and were from Viti Levu, Vanua Levu and 24 other islands; thus an excellent sampling was obtained from over a wide area of the colony and free from any blemish of family relationships. Under war conditions it has been found possible to obtain a sampling which is usually not possible in times of peace. The samples, consisting of two drops of blood, were collected in one millilitre of the glucose-citrate solution of Rous and

Turner, to which "Merthiolate" had been added to give a concentration of one in 100,000, and were immediately packed in ice in large "Thermos" flasks and sent to Melbourne by air, through the courtesy of the Australian, New Zealand and American Air Forces. The samples were collected in two lots, each of 100 specimens, at an interval of two months, and ten blood samples from white persons to serve as controls were sent with each lot. One flask, which was delayed, was repacked with ice while in transit, and these samples were tested seven days after collection. The other samples were tested four days after collection. All the samples arrived in Melbourne free from any evidence of lysis, and no sample was pan-agglutinable. The twenty control samples from white persons gave the expected results.

The Fijians whose blood we examined came from 26 islands and 185 villages. The details and blood group frequencies are shown in Table I. All tests for the groups, sub-groups, M, N types and the Rh factor were carried out by means of the slide technique as described by Simmons, Bryce, Graydon and Wilson (1941) and by Simmons, Graydon, Jakobowicz and Bryce (1943).

#### Results.

The group O percentage found by us and that recorded by Howells and Moss are almost identical; but whereas Howells records the incidence of group B as 9.4%, we found it in our series to be 16.5%, and in the study of racial origins this difference is an important one. Tests for the sub-groups of A revealed that all of the 68 specimens of blood of group A and the 12 of group AB were of sub-groups A<sub>1</sub> and A<sub>1</sub>B.

The M, N typing showed that 11% were of type M, 44.5% of type MN and 44.5% of type N. The details of typing and the gene frequencies are shown in Table II.

All of the 200 samples were found to be Rh-positive when tested with a human anti-Rh serum, "Mrs. C.", which gives the same reactions as standard anti-Rh guinea-pig serum.

#### Discussion.

In our sampling we found that the incidence of group B was 16.5%, as compared with 9.4% recorded by Howells for a survey by Moss in 1927. As our sample came mostly from adult males who originated in 185 villages and from 26 islands, and as there was a complete absence of family relationships, it may be claimed that our small sample is representative of the Fijian people today. Our group B percentage of Viti Levu is approximately double that found by Moss for the same island. If we compare our findings for group B in Fiji with that found in the Solomon Islands, Samoa and the Marshalls, it is seen that the percentages are practically the same, and on blood grouping data alone it would seem reasonable to place these islands in Melanesia (Table IIIA). The trace of group B reported in Polynesia (Table IIIn) is regarded by anthropologists who have visited the area as due to undetected European admixture.

TABLE IIIA.  
Comparison of Percentage of Group B found in Fiji with other Pacific Islands.

Island.	Number Tested.	Author.	Percentage Group B.
Fiji	200	(This survey.)	16.5
Solomon Islands	107	Howells (1933).	16.8
Samoa	500	Stephenson (after Boyd, 1939).	19.4
Marshalls	343	Takasaki (after Boyd, 1939).	16.9

TABLE I.  
Blood Group Frequencies in Fijians.

Island.	Number Tested.	Number of Villages.	Number and Percentage of Groups.				Frequency of Genes. <sup>1</sup>			D/σ <sub>D</sub> .
			O.	A <sub>1</sub> .	B.	A <sub>1</sub> B.	p.	q.	r.	
Viti Levu ..	99	91	45 (45.5)	30 (30.3)	18 (18.2)	6 (6.1)	0.202	0.129	0.675	0.435
Vanua Levu ..	26	25	10 (38.5)	9 (34.6)	4 (15.4)	3 (11.5)	0.266	0.145	0.620	0.901
24 other islands	75	69	32 (42.7)	29 (38.7)	11 (14.7)	3 (4.0)	0.242	0.098	0.653	0.146
Totals ..	200	185	87 (43.5)	68 (34.0)	33 (16.5)	12 (6.0)	0.225	0.120	0.660	0.501

<sup>1</sup> The gene frequencies were derived from the equations:

$$p = 1 - \sqrt{\frac{O+B}{100}}, q = 1 - \sqrt{\frac{O+A}{100}}, r = \sqrt{\frac{O}{100}}$$

$$D = 1 - (p + q + r), \sigma_D = \sqrt{\frac{pq}{2V(1-p)(1-q)}}, \text{ where } V \text{ is the total number of individuals in each sample.}$$

TABLE II.  
M, N Frequencies in Fijians.

Island.	Number Tested.	Number and Percentage of Types.			Frequency of Genes. <sup>1</sup>		D/σ <sub>D</sub> .
		M.	MN.	N.	m.	n.	
Viti Levu ..	99	5 (5.1)	45 (45.5)	49 (49.5)	0.278	0.722	1.403
Vanua Levu ..	26	2 (7.7)	9 (34.6)	15 (57.7)	0.259	0.750	0.535
24 other islands ..	75	15 (20.0)	35 (46.7)	25 (33.3)	0.433	0.567	0.420
Totals ..	200	22 (11.0)	89 (44.5)	89 (44.5)	0.332	0.667	0.034

<sup>1</sup> The gene frequencies were calculated from the relations  $m = \frac{2M + MN}{2V}$ ,  $n = \frac{2N + MN}{2V}$ ,  $D = 1 - \left(\sqrt{\frac{M}{V}} + \sqrt{\frac{N}{V}}\right)$ ,  $\sigma_D = \frac{1}{2\sqrt{V}}$ , where  $V$  = number tested.

TABLE IIIb.

Island.	Number Tested.	Author.	Percentage Group B.
Tahiti ..	124	Shapiro (1940).	4.8
Tuamotus ..	176	Shapiro.	0
Hawaii ..	413	Nigg (1930).	2.2
Easter Island ..	21	Shapiro (1940).	0
Easter Island ..	63	Rahm (after Boyd, 1939).	3.1
New Zealand ..	127	Phillips (1931).	0.8
New Zealand ..	73	Phillips (1931).	1.4

In our sample all blood of group A or AB belonged to sub-group A<sub>1</sub> or A<sub>2</sub>B. This absence of the sub-group A<sub>2</sub> has also been found in the Australian aborigines, in Indonesians, in Hawaiians, in American Indians, in Chinese, and apparently also in the Eskimos. The Indians in Calcutta have a percentage intermediate between that for native races and white people, while the American Negroes possess an exceptionally high percentage of A<sub>2</sub>.

The details of these surveys, showing the number tested, the author and the percentage of sub-group A<sub>2</sub> found, are given in Table IV.

TABLE IV.  
Distribution of Sub-group A<sub>2</sub> in Various Races.

Race.	Number of Group A and AB Tested for Sub-groups.	Author.	Number and Percentage of Sub-group A <sub>2</sub> .
Fijians ..	80	(This survey.)	0
Indonesians ..	80	Simmons <i>et alii</i> (in the press).	0
Australian aborigines ..	293	Wilson <i>et alii</i> (1944).	0
Australian aborigines ..	105	Simmons <i>et alii</i> (1944).	0
Hawaiians ..	237	Nigg (1930).	0
Japanese ..	189	Graydon and Simmons (in the press).	2 (1.1)
American Indians ..	93	Matson <i>et alii</i> (1936).	1 (1.0)
American Indians ..	31	Landsteiner <i>et alii</i> (1942).	0
Chinese, New York ..	58	Levine and Wong (1943).	2 (3.4)
Chinese, New York ..	57	Wiener <i>et alii</i> (1944).	0
Eskimos ..	199	Sewall (after Boyd, 1939).	Very small
Indians, Calcutta (1941 series).	50	MacFarlane (1943).	4 (8.0)
American Negroes ..	89	Landsteiner and Levine (1930).	33 (37.1)
Australian whites ..	307	Wilson <i>et alii</i> (1944).	57 (18.6)

A comparison of the M, N types for this survey with those of the Australian aborigines and the Indonesians reveals differences. The Fijian percentages are similar to those of the Australian aborigines, but quite distinct from those of the Indonesians. For the purposes of comparison they are shown in Table V.

Our knowledge concerning the racial distribution of the Rh factor is being rapidly extended, and it is interesting to note that with rare exceptions Rh-negative blood has been found only in the white races and the American Negroes.

#### Summary.

1. The blood groups, sub-groups, M, N types, and the incidence of the Rh factor in blood samples from 200 pure-blooded Fijians who originated on 26 islands and in 185 villages have been determined.

TABLE V.  
Comparison of M, N Percentages for Fijians with those of Australian Aborigines and Indonesians.

Race.	Number Tested.	Author.	Percentage of M, N Types.			Frequency of Genes.	
			M.	MN.	N.	m.	n.
Fijians ..	200	(This survey.)	11.0	44.5	44.5	0.332	0.667
Australian aborigines ..	649	Wilson <i>et alii</i> (1944).	11.1	37.3	51.6	0.297	0.703
Australian aborigines ..	70	Simmons <i>et alii</i> (1944).	10.0	40.0	50.0	0.300	0.700
Indonesians ..	296	Simmons <i>et alii</i> (in the press).	30.4	45.6	24.0	0.532	0.468

TABLE VI.  
The Rh Factor in Various Races.

Race.	Number Tested.	Author.	Rh-positive Percentage.
Fijians ..	200	(This survey.)	100.0
Australian aborigines ..	281	Simmons <i>et alii</i> (1944).	100.0
Indonesians ..	296	Simmons <i>et alii</i> (in the press).	99.3
American Indians ..	120	Landsteiner <i>et alii</i> (1942).	99.2
Chinese, New York ..	150	Levine and Wong (1943).	99.3
Japanese ..	400	Graydon and Simmons (in the press).	99.75
American negroes ..	113	Landsteiner and Wiener (1941).	92.0

2. The blood of 43.5% was of group O, that of 34% of group A, that of 16.5% of group B, and that of 6.0% of group AB. All blood of groups A and AB (80 specimens) was of sub-groups A<sub>1</sub> and A<sub>2</sub>B.

3. The incidence of the group B factor in our series, in contrast to that reported by Howells, is consistent with the classification of the Fijians as Melanesian.

4. The blood of 11% was of type M, that of 44.5% of type MN, and that of 44.5% of type N.

5. All of the 200 samples tested were Rh-positive.

6. These findings are compared with those published for some other races.

#### Acknowledgements.

We are grateful to Dr. F. G. Morgan, Director of the Commonwealth Serum Laboratories, Melbourne, and to the Director of Medical Services, Suva, Fiji, for permission to carry out this work, and to Mr. E. F. Woods, B.Sc., for his help in this survey.

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### PELVIC X-RAY MEASUREMENTS AND PELVIC CONTRACTION.<sup>1</sup>

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New South Wales.*

BEFORE attacking the main matter of this address I should like to put before you a few personal postulates, all of them of a slightly contentious and even provocative nature. These postulates—for they have the validity of postulates to me at least—have a general application to diagnostic radiology as a whole. They are of particular significance in exploring any fresh medical territory, and they cast a clear light which will help us to see exactly how we should apply our own particular methods to such a new field as obstetrics. We shall thus establish a background with which our final picture must be in harmony.

#### First Postulate.

The radiologist is certainly not a medical specialist in any ordinary sense of the term. He has no special corner of the medical art in which he aims to be fully instructed and completely efficient. His speciality, if any, resides in the instrument he wields and in the method he uses; but there is no special focusing of effort on one limited area of medical practice. Radiology may therefore be best described as a technical speciality of method. It is an applied tool, which acquires merit only from its results. The slide rule is not mathematics, and radiology is not medicine; radiology is an intricate means used to achieve an end, and that end is the same as that of the general physician—to discover diagnostic facts about the patient. A faint aroma of general practice hangs around the radiologist. The signs discovered radiologically, however, have no special value by reason of their origin. Their value is only in proportion to their intrinsic importance for diagnosis in relation to all the other facts from which a diagnosis is built up. The simple use of observation or a well-taken history may be infinitely more valuable than the most elaborate X-ray procedure, for we can see such vital facts as cyanosis, dyspnoea and jaundice with our two eyes.

We may conclude, therefore, that the radiologist has no divine right to superimpose his findings on the clinical substructure as something special or God-given. He may well lay the flattering unction to his soul that he is important and even necessary. He must talk intelligently and efficiently, or at any rate fluently, with each of a dozen different specialists; but if he is really intelligent, he must realize that adequate clinical knowledge alone makes his special technical investigation possible. The

universal applicability of his method underlines the absolute necessity for a wide clinical knowledge, possibly not deep because it is so wide, but still very extensive. The radiologist is never the architect of the diagnosis, but merely one of the team of builders. He therefore should enter the new territory of obstetrics warily. His map is not a text-book of radiology, but a good text-book of obstetrics. His sign posts are a dried female pelvis and a foetal skull, which should be both assiduously studied. His X-ray training is merely the lamp that lights his way into new country. His radiological status however good, his prestige however high, carry no authority for "*ipse dixit*" statements based on mystical numbers and varying film shadows, unless the status and prestige are backed up by a sound knowledge of obstetrics itself.

#### Second Postulate.

There is no such thing as an X-ray diagnosis, for diagnosis, to be accurate, can only be based on all the facts ascertained about the patient by all means of investigation. The X-ray examination is inevitably an incomplete examination, limited in its potentialities by the very qualities which make it so useful. It may furnish important and even critical information that can be gained in no other way, it may furnish positive or negative information, but it never can tell us all we should know to make a firm diagnosis.

Obstetrically, therefore, in relation to pelvic X-ray measurements there is no such thing as regular prophecy concerning the outcome of labour. Too many factors are beyond our ken and are not imprinted on the film. We must bear in mind that we see almost exclusively bones and bones only, with practically no outline of soft parts, whilst the powers so all-important in labour are not revealed to us in any degree whatever.

#### Third Postulate.

The radiologist is forever completely dependent upon and dominated by the clinician, whether he likes it or not. By that I do not mean that he is beholden for the reference of patients—though it is obvious that a method in which the clinician is not interested cannot survive—but rather is he beholden for the provision of all those clinical facts which fertilize our X-ray observations. We as radiologists come to full fruition only when we consider our patients as clinical problems upon which we have to shed further light by our special method. The obligation therefore lies upon the clinician to furnish us with clinical data both individually and generally. With each patient we should receive the complete clinical history to date, and afterwards we should receive a summary of the complete clinical outcome to raise our morale or keep us humble as the case may be. In the wider sense the provision of general clinical instruction from the other members of our profession is adequate. We are flooded with literature in all the journals. The radiologist's trouble is not a scarcity of information, but rather a difficulty in keeping abreast of those essentials which concern his special practice in each branch of medicine. Here our clinical friends may and often do help by passing on to us those articles appearing in their special journals which may interest us. Conversely, to our own benefit we might pass back radiological journals likely to be of special clinical interest to them. In passing, one may remark how clinical the contents of radiological journals are becoming.

Unfortunately many clinicians regard our method as purely objective and divorced from diagnosis as an art. They use us for the confirmation or refutation of provisional hypotheses and will not credit us with any relation to the realities of clinical life. They prefer to keep us captive, like soothsayers who cast a special horoscope for them in times of difficulty. Our task is to teach them to regard us as physicians and to admit us to a full participation in diagnosis on our merits, clinical as well as radiological. All this specially applies to obstetric radiology. Here we must freely acknowledge the ascendancy of the obstetrician. We must develop our methods in accordance with his own terminology and in conformity with his aspirations, for in this castle he is king. We shall establish

<sup>1</sup> Read at a meeting of the Australian and New Zealand Association of Radiologists at Melbourne on September 29, 1944.

our right to full radiological participation in obstetric diagnosis and treatment, only if we intensively study the results of each of our X-ray examinations as a clinical problem in labour, and not as a mere set of X-ray films to be measured and commented on. This entails the collection of pre-labour and post-labour data and calls for enthusiasm, concentration, and above all in these busy days, time. In this way, every examination becomes a fertile source of experience and knowledge, and the study gathers increasing interest as the obstetric background rounds out and clarifies the X-ray effort.

#### Fourth Postulate.

Present-day radiology is unprepared for new advances into new territory. This is precisely because we have failed to appreciate the paramount necessity of full clinical knowledge in each new field. The advent of neuro-radiology caught us entirely unprepared, and the coming of obstetric radiology will no doubt do the same, with the difference that proficiency in the latter is a matter of national importance and will eventually be as necessary to the competent radiologist as proficiency in the examination of the respiratory or alimentary system is today. As I see it, the only advances in radiology that can possibly come are those arising from the union of a highly qualified clinician and a highly enthusiastic radiologist, the first furnishing the clinical and the second the technical elements of research. The clinical scope is too wide for the radiologist to undertake the full and detailed study of every branch of medicine—hence his dependence upon the clinician. He has a sufficient and mighty task to absorb the essential elements of each area he invades.

The tendency of many radiologists to retreat before these increasing clinical demands is to be deplored, for the emergence of this modern clinical side of radiology is our greatest achievement to date and embodies our greatest hope of keeping radiology as a specialized technical branch of medicine with wide clinical aspirations. On any other basis we shall degenerate into technicians, and radiology will fade away into empiricism, pretension and error.

#### Fifth Postulate.

The education of the medical profession in radiological possibilities has been neglected. The use of X rays gives a sixth sense to diagnosis and certainly constitutes the most important single diagnostic advance in the history of medicine. If we analyse the incidence of X-ray facts upon diagnosis in general, it is difficult to exaggerate their importance. The methods used to gain this information are abstruse, and the technical details are of little interest to the profession as a whole. The important matters from the clinician's viewpoint are those of absolute and relative values arising from the X-ray report. Questions of emphasis or exclusion and the relative significance of positive and negative findings, the distinction between what is objective evidence and what is subjective interpretation, the coordination of the X-ray facts with the clinical findings—all these aspects and others are neglected, and the X-ray finding is too often regarded as a single, objective, technical truism which stands in splendid isolation, needing no clinical support, and which can be accepted with enthusiasm or rejected with contumely like a weather forecast according to the desires of the receiver. In spite of all this, medical students receive no systematic instruction in radiology as a whole. Some spasmodic and casual information on the subject is proffered them by clinicians during the study of films taken in the conduct of routine examinations, but nothing of any direct consequence is achieved. As a result many physicians know nothing of X rays. They have exaggerated ideas of the value of X-ray examination in some cases and erroneous ideas in others. They have no sense of real values, and only too often they cannot place the X-ray report in its true relation for diagnosis.

At the Royal Hospital for Women we have recently been giving each set of resident students and some graduates systematic lectures in obstetric radiology, in the hope that in this branch at least there shall be some true conception

of the place X-ray examination should occupy in the general scheme. I further believe, however, that the establishment of a chair of radiology in our Australian universities is long overdue. Radiology cannot claim the fundamental importance of pathology in the study of medicine, but in the practical application of diagnosis it is at least of equal importance and thus merits greater attention in our educational schedules.

Clinical education, clinical cooperation and clinical inspiration are the mainsprings of modern radiological effort, and this applies to the use of X rays in obstetrics as well as to radiology in general.

#### The Nature of the Problem.

We have now concluded a general survey of the background against which the problem stands, and may proceed farther to consider the general nature of the clinical problem as it presents itself to the radiologist.

The conduct of labour is beset with many and varied difficulties, but in its simplest essence the problem is to pass a fetal head of a certain size through a roughly cylindrical and anteriorly incomplete bony ring, which may or may not be ample for the purpose. The bones are the limiting unyielding foundations on which the soft tissues are built. The diagnosis of pelvic contraction, deformity or disproportion is therefore fundamental to the obstetrician and represents the basic physical geography of labour.

Orthodox obstetrics has till recently relied upon manual palpation and examination, with external or more rarely internal pelvimetry to secure this information; but most obstetricians will now admit serious deficiencies in these methods, just as physicians at long last admit the relative inadequacy of the stethoscope.

It is precisely here that radiology steps in and supplies an accurate visual picture of the internal pelvic contours with a detailed study of any bony abnormality present. Particularly if these X-ray studies are stereoscopic, the obstetrician almost holds in his hand the bony pelvis with its contained fetal head. The head is the best pelvimeter, we are told, and here we have both elements, head and pelvis, faithfully depicted, shorn of their concealing flesh and on the same relative scale. Admittedly the soft parts are absent; but the value of such a fundamental demonstration cannot be doubted, for it carries with it the fullness of a visual satisfaction unobtainable by mere touch and palpation. This is of great value; but in addition it is possible to measure by X-ray methods all the important pelvic diameters correct to within at most half a centimetre, thus adding the satisfaction of measurement to that of vision. Still further, by the volumetric method of Robert Ball to be described later, it is possible to establish a fairly accurate estimation of the presence of disproportion at both inlet and outlet.

The problem as it presents itself to the radiologist may be held to possess two facets—a quantitative facet, wherein we deal with actual measurements and numbers, the sizes of diameters and relative volumes, and a qualitative facet wherein we analyse the shape and contours of the pelvis in their relation to the mechanism of labour. The first facet is well developed and exact, whereas the second or qualitative analysis is as yet immature and incompletely understood. The shape of the pelvis, in border-line instances of pelvic contraction at least, is just as important as actual size. The pelvis may be so large in relation to the head that abnormal shape causes no obstruction at all, or it may be so small that labour is impossible whatever its shape; but in two pelves of equal dimensions a variation in shape may make all the difference between normal and obstructed labour. This qualitative analysis is more intriguing than the quantitative analysis, just because it offers more opportunity for research. Nor has the obstetrician himself any real detailed knowledge of the effect of the finer variations of shape. Much of what is known of this matter has come from previous X-ray investigations, and neither obstetrician nor radiologist is fully prepared to handle the wealth of information potentially present. This is the main point of research

where cooperation of the two branches is needed. Particularly do we need more X-ray studies of the pelvis and head during the progress of labour itself to analyse more fully the mechanisms taking place in the differing varieties of pelvis. I fancy that in the future X-ray examination during the course of obstructed labour will pay large dividends to the progressive obstetrician by informing him how the available space in the pelvis can best be utilized. It is equally probable that in this same future, early X-ray examination will greatly limit the incidence of such obstruction. I hope to see the X-ray department in the future obstetric hospital move next to the labour wards, just as in surgical hospitals it is tending to move next to the operating theatre, for it is here on the spot, where the work is done, that the radiologist can be of the greatest and most prompt assistance.

Caldwell and Moloy<sup>(1)(2)(3)</sup> have classified pelvises according to the shape of the inlet into gynecoid, android, anthropoid and platypelloid, and such shape exercises a definite influence upon the course of labour (Figure I). This

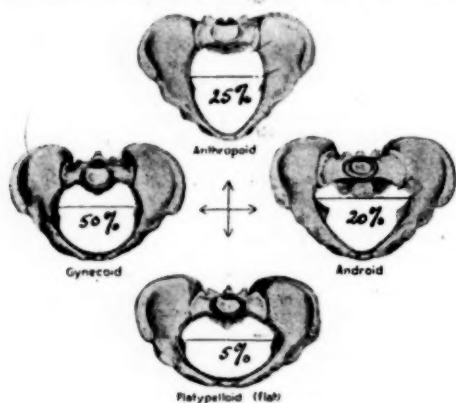


FIGURE I.  
Types of female pelvis (after Eden and Holland).

classification has been well received by obstetricians, and has influenced Eden and Holland in their simple list of varieties of contracted pelvis. They define a contracted pelvis as one in which any of its essential diameters is so shortened as to alter the mechanism of labour—a definition which obviously implicitly provides for the effect of shape. The classification is as follows and is based on aetiology:

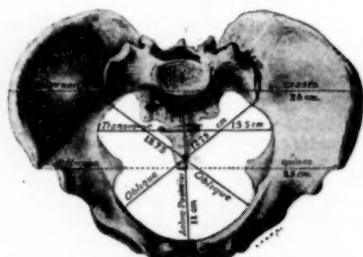


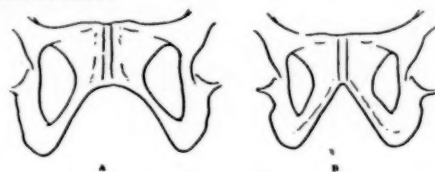
FIGURE II.  
Normal female pelvis, showing diameters of inlet (after J. Whitridge Williams, 1917).

1. Due to sex, race, evolutionary and other factors: gynecoid when small; android when of extreme degree or small; anthropoid when of extreme degree or small; platypelloid when of extreme degree or small; Naegle's pelvis; Robert's pelvis.
2. Due to bony disease: rickets flat; rickets, generally contracted, flat; osteomalacic tri-radiate.
3. Due to spinal deformity: scoliotic; kyphotic; spondylolisthetic.
4. Due to fractured pelvis and tumours.

It may be noted that in the first class, an extreme variation in shape is rated the same as a contraction in size.

All these types have variation in shape as a primary abnormality associated with diminution of some of the diameters as a secondary deficiency. X-ray examination and measurement with a combination of qualitative and quantitative analysis give us almost a scale contour of the pelvic passages at any individual examination. In the lateral view particularly the whole bony contour of the birth canal is plainly revealed.

The complete analysis of the pelvis in relation to pelvic contraction therefore involves a consideration of the following factors and measurements. All these measurements need not be made at any one examination, but they are available for study in any specially complicated or doubtful instance. With increasing experience mere visual inspection becomes more and more successful with less and less measurement.



FIGURES III.  
Varieties of subpubic arch (after Caldwell, Moloy and Swenson, *American Journal of Roentgenology and Radium Therapy*, April, 1939).

#### Quantitative.

Inlet.	Normal.
Conjugata vera	11 centimetres
Transverse	13.5 centimetres
Oblique (if asymmetrical)	12.75 centimetres
Outlet.	Normal.
Bispachial	10.5 centimetres
Intertuberous	11.00 centimetres
Antero-posterior	13.00 centimetres
Posterior sagittal	

#### Qualitative.

**Inlet.**—Shape and symmetry; type—gynecoid, anthropoid, android or platypelloid; shape of forepelvis.

**Side Walls.**—Parallel, convergent or divergent; character of ischial spines—flat, normal or prominent.

**Subpubic Arch.**—Characteristics—broad or narrow; structure of ischio-pubic rami.

**Lateral View.**—Sacro-sciatic notch; relation of ischial spines to sacrum; position of sacrum, anterior, median or posterior; curvature of sacrum; general contour of birth canal.

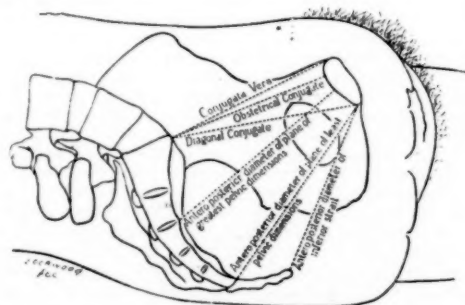


FIGURE IV.  
Lateral view of pelvis, showing possible X-ray measurements (after J. Whitridge Williams, 1917).

#### Fetal Head.

In addition to a consideration of the lie, presentation, position and flexion of the fetal head, we have to make an estimate of the presence or absence of disproportion in relation to the head. I regard any attempt to measure specific diameters such as the sub-occipito-bregmatic or occipito-frontal as doomed to failure, for the head varies

greatly in position and is as often viewed obliquely on the film as in the required profile. We are therefore reduced to a volumetric estimation based on the measurement of the head circumference as defined in Ball's method.



FIGURE V.

Showing relative positions of sacrum, anterior, median and posterior, in relation to bischial spines (after Caldwell, Moloy and Swenson, *American Journal of Roentgenology and Radium Therapy*, April, 1939).

#### The Technical Solution of the Problem.

Such is the nature of the clinical problem, and it only remains to indicate the technical solution. Many methods are available, but the discussion will be confined to those used at the Royal Hospital for Women during the last five years.

For the special examination of the inlet we use the well-known Thom's method with the perforated plate. The table top apparatus<sup>(4)</sup> we have used to position the patient is depicted in Figure VI. The patient sits in a semi-reclining position (Figure VII) leaning on the back rest (C), so

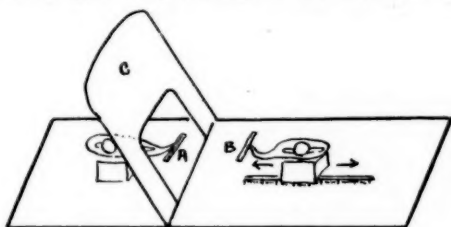


FIGURE VI.

Table-top with indicators used for Thom's technique.

that the pelvic inlet is parallel to the table top. Through the opening in the lower end of this back-rest the posterior adjustable bar (A) is adjusted to the interval between the patient's fourth and fifth lumbar spinous processes. The anterior adjustable bar (B) is placed one centimetre below the brim of the pubis anteriorly. These two bars now lie in the plane of the pelvic inlet and the patient with the bars should be adjusted till both bars are at the same height above the table top. The position of the anterior bar is then noted on the sliding scale on the table top. An exposure is made with the tube focus vertically above the centre of the inlet about three inches posterior to the anterior bar. The film remaining in position, the patient leaves the table, the anterior bar being slid away. After it has been returned to the previously noted position, the centimetre perforated plate is placed across the two bars and is thus brought into the same plane as the pelvic inlet. A flash exposure is now made, and this imprints the dots equally spaced, each space representing one centimetre. From this the measurements of the inlet are rapidly made. This gives a view of the pelvis similar to the appearances in Figures I and II. The shape of the inlet is, of course, apparent, and the pelvis can be classified as gynecoid, android, anthropoid, platypelloid or as one of the composite forms.

For the pelvic cavity and outlet and for the foetal head we use Ball's method.<sup>(5)</sup> An antero-posterior view and a true lateral view of the pelvis are taken in the horizontal position at a given tube-film distance, usually 30 or 36 inches. The method is fully described in the journals, and it is sufficient to say that from a consideration of measure-

ments on the films we obtain figures for (i) the image of the desired diameter on one film and (ii) the distance of this diameter from the film on the other view, taken at right angles to the first. As the tube distance is known, by the theory of similar triangles we can at once calculate the true size of the desired diameter. The method can be applied to almost all the clinically useful diameters. All the calculations are made by the use of a special nomogram which reads off the corrected result after a simple mechanical operation. With this instrumental aid the complete analysis of the pelvis can be made from the films in less than ten minutes.

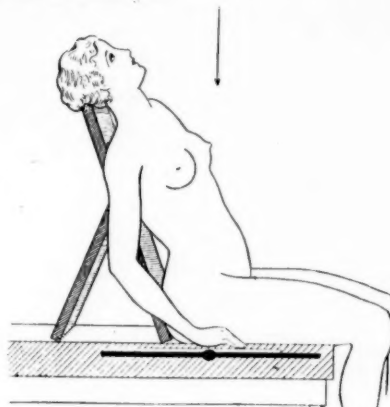


FIGURE VII.

Position for Thom's technique (after Shanks, Kerley and Twining).

With regard to the foetal head, the circumference in each view is measured with a map tracer and the film distance of the circumference is measured on the opposite film, the central point of the skull being taken as a measuring point. Each circumference is then corrected on the same principle as is used with the diameters. Two centimetres are added to each circumference to allow for the invisible scalp and an average of the two measurements is made. To relate the head to the diameter we consider the head as possessing the volume of a sphere of that circumference and the diameter in terms of the volume of a sphere of that diameter. The idea of these measurements and their equivalent spherical volumes is shown in Figure VIII. It

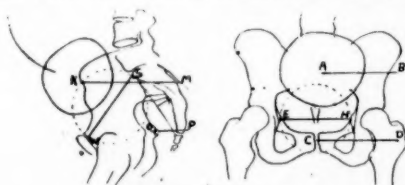


FIGURE VIII.

Diagrammatic view of films for Ball's method of calculation (after R. P. Ball, *Radiology*, March, 1939).

is considered that if the equivalent spherical volume of the head does not exceed that of the diameter by more than 150 cubic centimetres, then the head will pass that diameter with adequate moulding. This numerical relation, of course, gives only an indication, as it takes no account of shape. A head with an equivalent spherical volume somewhat greater than that of the pelvic conjugata vera may engage easily in the transverse diameter of the inlet with the short biparietal diameter in the shortened antero-posterior diameter of the inlet.

The numerical findings must be related to the qualitative analysis particularly in regard to the outlet, where so much depends on the characters of the subpubic arch and the relationship of the sacrum to the bischial diameter

and the plane of least pelvic dimensions. I would repeat here that the data can never be used to prophesy an easy labour. So many factors other than the X-ray findings are of importance that it is wiser to refuse to prophesy a favourable outcome. We can, however, indicate probable difficulty and where it is likely to occur. In rarer instances we can demonstrate the impossibility of successful labour by the natural means, and so indicate the performance of a prompt Cæsarean section as the only course available.

The importance of the subpubic arch in relation to contracted outlet is so great that it warrants special investigation. Recently we have in all cases been taking a film in Chassard and Lapin's position (Figure IX). Here the patient sits astride a small cassette and leans forward so



FIGURE IX.  
Position for films of subpubic arch, Chassard and Lapin's method (after "Text Book of X-ray Diagnosis", by British authors).

that the pubic arch lies parallel and close to the film. The tube is directed downward and forwards from above and behind the patient's buttocks. By this means we secure an undistorted image of the ischia and pubic rami from which we can obtain qualitative and quantitative data. The pelvic view obtained is that outlined in Figure III.

It is common to find a bischial diameter so shortened as to suggest grave disproportion at the outlet, and then to find that the foetal head escapes the gravest effects of the narrow diameter through a wide and sufficient subpubic arch. The pubic arch in such labours acts as a kind

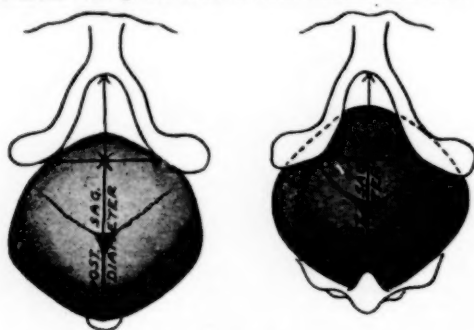


FIGURE X.  
Diagram showing importance of posterior sagittal diameter of outlet with contraction of the subpubic arch (after Eden and Holland).

of "escape hatch" for the imprisoned head. If the subpubic arch is narrow, the importance of a roomy posterior sagittal diameter of the outlet is shown in Figure X, which is self-explanatory.

These three sets of exposures therefore enable us to give a complete analysis of the pelvis and to relate the foetal

head to this analysis. We are lacking in the evaluation of many of the data we can see, but with increasing experience we seem to be gathering some efficiency, as is shown in the histories of the labours following our analyses.

Some improvements Ball has introduced we also propose to adopt when we secure the new and more powerful apparatus which we badly need. Ball now takes all his films with the patient standing to avoid shift in the position of the child due to the varying effects of gravity. Such shift, if pronounced, obviously vitiates our calculations, which presume that the head and the pelvis remain in the same relationship for both exposures. I do not think the error is large except in the presence of breech presentations, where the head is very mobile in the fundus. The substitution of a stereoscopic pair of antero-posterior films for a single film should also improve the visual perception of position and relative proportion.

I have further been experimenting with the direct measurement of the pelvic dimensions in the stereoscopic image, using the so-called "phantom ruler" method; but at present I believe that Ball's method is the more accurate, as the evaluation of end points in the stereoscopic image is, to me at least, difficult.

It should be noted that in our system measurements of the inlet are made by both Ball's and Thom's methods. A sufficient commentary on the accuracy of both methods is that they seldom vary by more than 0.5 centimetre.

#### Method of Using X-Ray Pelvimetry.

I would suggest that every primiparous woman had an accurate X-ray pelvimetric examination carried out in the early months of pregnancy. This includes film by Thom's, Ball's and Chassard's methods—four films in all—relatively a small effort when the information gained is considered. The technical difficulties are far less without the presence of a large pregnant uterus. If the result of these films indicates normality, and if clinical indications remain normal, probably no further X-ray examination will be necessary. If, however, any doubt remains after this primary examination, or if the clinical findings are later unsatisfactory, then a further examination by Ball's method of pelvicalphimetry should be carried out later on in the course of pregnancy. I believe that standard obstetric practice will ultimately develop somewhat on these lines.

#### The Results.

To check up on results we have a short summary of the labour sent back to the X-ray room after the confinement. This includes the measurements of the foetal head and the weight of the child. At the next attendance of the radiologist at the hospital all completed case sheets are brought up for review, principally as a matter of education, for future use. Generally, when we predict difficulty, the history bears this out, as the necessity for the use of forceps or a prolonged second stage is reported.

Where we suggest fairly certain deficiencies the difficulty of confirmation is greater, for many of these patients are more safely treated by a Cæsarean section without trial labour. In the absence of natural labour we are thus left without actual confirmation of our findings. This particularly applies to elderly *primiparae*. In this matter I sometimes feel that the clinician tends to cast too heavy a responsibility on the radiologist, who is after all breaking much new ground and should not at this stage of his education be asked for a definite "yea" or "nay" in every instance. However, occasionally patients are sent back for a pelvimetric examination after a Cæsarean section has proved necessary, and in these instances we usually find some cause for the difficulty. On the other hand, a report of normal X-ray findings is often followed by a history of difficult labour, and in such cases one may reasonably assume that the difficulty probably arises from factors other than pelvic disproportion. This is only to be expected, for as I have emphasized, the X-ray examination does not cover all the factors influencing labour.

Broadly speaking and making all allowances for the mistakes of immature experience, we seem to be accom-

plishing something worth while. The clinical staff is gradually making more use of our services, and apparently relying more upon our pelvic analyses. However, we still have a great deal to learn, and really efficient obstetric radiology will come only by the placing of the radiological emphasis upon obstetrics and to some extent at least the obstetrical emphasis on radiology.

#### References.

- <sup>(1)</sup> W. E. Caldwell, H. C. Moloy and P. C. Swenson: "The Use of the Roentgen Ray in Obstetrics, Part I", *American Journal of Roentgenology and Radium Therapy*, March, 1939, page 305; "The Use of the Roentgen Ray in Obstetrics, Part II", *ibidem*, April, 1939, page 505; "The Use of the Roentgen Ray in Obstetrics, Part III", *ibidem*, May, 1939, page 719.
- <sup>(2)</sup> R. Torpin, L. P. Holmes and W. Hamilton: "Roentgen Pelvimeter Simplifying Thom's Method", *Radiology*, November, 1938, page 584.
- <sup>(3)</sup> R. Ball: "Pelvicephalimetry", *Radiology*, March, 1939, page 188.

### RADIOLOGY OF PELVIC TYPES AND THEIR OBSTETRICAL SIGNIFICANCE.<sup>1</sup>

By D. G. MAITLAND,

Lecturer in Radiology in Obstetrics, University of Sydney.

I SHOULD like to thank you for the opportunity of speaking to you this evening upon a subject which should be of interest not only to the radiologist, but also to the obstetrician, for it is by cooperation and by the mutual understanding of the problems with which each is beset that the utmost clinical benefit can be obtained from the radiological study of the female pelvis and its variations in form.

It is thirteen years since I last visited Melbourne, and I remember the kindness with which I was received and the trouble which was taken in demonstrating equipment and methods by those whose X-ray departments I visited. I have since come to the conclusion that the Victorian must be tolerant to youthful enthusiasm, and I sincerely trust that the same degree of tolerance will be extended to me now, should I trespass a little from the radiological to the obstetrical field.

This country has lagged behind other parts of the world, notably America, in employing radiology as an aid in obstetrics. The late W. E. Caldwell, and H. C. Moloy, of New York, upon whose work my remarks this evening will be based, have contributed greatly to the understanding of the effects which are produced in labour by variations in pelvic form, and they have demonstrated in a remarkable manner how the radiological examination of the pelvis before labour, and of the foetal-pelvic relationship during labour, can assist in the management of the obstetrical patient.

If, at this early stage, I may digress for a moment, I should like to outline briefly the progress of obstetrical radiology in Sydney, as the information may prove useful to those of you here tonight who are considering the installation of radiological equipment at an obstetric hospital or unit. The Women's Hospital, Crown Street, was the first obstetric teaching hospital in Sydney to equip an X-ray department. I was appointed honorary radiologist in 1933, and a small X-ray room with dark-room annexe was set aside to house a single-valve unit of modest output. At that time there were still some who considered that X rays were unnecessary in obstetrics, or that their use might be dangerous to the mother or child. In the circumstances, it was thought that it would be advisable to commence the establishment of the department and its work in a modest fashion rather than postpone it, and that there was every likelihood of postponement should the initial expense prove to be too great. A year or so later the Royal Hospital for Women also equipped an X-ray department. In both these hospitals, routine and obstetric

radiographic work has proved of great value to the general health of the expectant mother, and in the management of obstetric and gynaecological patients.

During the war, the King George V Memorial Hospital for Mothers and Babies was completed and opened, and I was somewhat dismayed to see that the area which had been allotted as the X-ray department consisted of a single room and a dark-room annexe. It had been originally designed to house an emergency X-ray unit only—the main radiographic work, it had been thought, could be carried out in the large general public hospital department of the Royal Prince Alfred Hospital. This has now been rectified, and I sincerely hope that the future X-ray department and facilities will be worthy, not only of the powerful and essential equipment, but also of the modern maternity hospital itself. I am indebted to Dr. Herbert Schlink and to Professor Bruce Mayes (professor of obstetrics at the University of Sydney) for their active support in my work, for they consider radiology in obstetrics of sufficient importance to warrant instruction, not only to the senior year medical students, but also to the trainee nurses at King George V Memorial Hospital for Mothers and Babies.

The X-ray department should be in close proximity to or within easy access of the labour ward. It should be of ample size for healthy and comfortable working conditions, well lit with natural light and well ventilated. High-powered equipment and X-ray tubes of the finest obtainable focus are necessary, because speed of exposure and clarity of shadows are essential in obtaining stereoscopic films of the patient during labour. The ideal has not yet been achieved either at the Women's Hospital or at the King George V Hospital, but unfortunately the war has prevented the installation of new equipment at the one hospital and the importation of added equipment to the other. It is for this reason that I shall not speak this evening upon the stereoscopic method of X-ray observation during labour, but shall confine my attention to the examination of the pelvic type and its effect upon labour.

Whenever it is possible, this examination should be carried out early in pregnancy, when external bony landmarks are easily palpable, and when radiographic examination can be carried out with ease and accuracy. The method adopted is that of Thom's or Robert's pelvic inlet plane projection with measurements, together with antero-posterior and lateral view projections and, if necessary, a 45° angle view of the subpubic arch. In certain cases standard stereoscopic films of the pelvic inlet projection view are obtained to give a contour impression of the bony pelvic cavity. In the later stage of pregnancy the same procedure may be adopted, but the quality of the films is less striking, and the accuracy of measurement is slightly impaired by the physical proportions of the patient.

The previous speaker has covered the subject of pelvimetry and pelvicephalometry in a thorough and concise manner, and I can add little to his remarks except to say that the use of the Ball method of pelvicephalometry, as such, has been discontinued at the Women's Hospital and at the King George V Hospital, except in conjunction with the examination for pelvic type. It was thought that a volumetric method based entirely upon the volume capacity of two pelvic diameters—namely, the conjugate diameter and the bischial diameter—would lead to errors in judgement of the true pelvic capacity if the important factor of pelvic type was not considered at the same time. Cæsarean section might be carried out unnecessarily upon a patient who had a narrowed bischial diameter, yet a pelvis which was otherwise adequate.

The component parts of the pelvis are the most visible portions of the skeleton. The etiological factors which produce these variations are well known, the most important being non-pathological factors, errors in growth and development, sexual factors and racial factors. The size of the pelvis is variable, and the size of the foetal head is also variable; but the average woman usually produces a child proportionate to her stature but not always proportionate to her pelvic capacity. The size of the pelvis alone may not indicate an easy or a difficult labour; but the study of pelvic type has altered the conception of pelvic

<sup>1</sup> Read at a meeting of the Australian and New Zealand Association of Radiologists at Melbourne on September 29, 1944.

capacity as based upon the old methods of external pelvimetry.

I do not mean to imply that external pelvimetry is misleading, but that exact clinical observation will lead to the suspicion that some minor pelvic deformity may exist, and in these cases radiological examination will be of assistance.

For purposes of description and study, the pelvis is divided into inlet, mid-pelvis (the level of the ischial spines), lower posterior segment (the space above the sacro-coccygeal platform), and the lower anterior segment or outlet (the space in front of the sacral tip). The pelvis is divided into an anterior and a posterior segment by a coronal plane, which passes through the widest transverse diameter and the interspinous diameter. All antero-posterior diameters from inlet to outlet are thus divided into an anterior and a posterior sagittal diameter.

At the inlet the lengths of the anterior and posterior sagittal diameters and of the widest transverse diameter vary according to the basic pelvic type. Below the inlet, variations in the boundaries of the true pelvis occur because of the changes in shape as the outlet is approached. The inclination and curvature of the sacrum, the slope of the lateral walls and the inclination of the symphysis and the pubic rami produce these variations.

#### Pelvic Types.

Pelves are classified according to the shape of the inlet, together with a description of the boundaries of the true pelvis at lower levels. Four parent types occur: the gynaecoid, the platypelloid, the android and the anthropoid. The posterior segment of a pelvis may conform to one parent type, while the anterior segment may conform to another type. In this way the mixed, or intermediate, pelvic types are classified. An android—or so-called male type—of pelvis may have the same conjugate and transverse diameters of the inlet as the ample gynaecoid type of inlet; yet from the obstetric viewpoint the pelves are very different indeed. Again, in the anthropoid type of pelvic inlet, the capacity is less than would be expected if it was judged by the long conjugate diameter.

The subpubic arch may vary in size and shape, irrespective of the pelvic type. The splay of the side walls is also variable, and straight, convergent and divergent forms occur. Convergence may involve only the mid-ischial plane, because of a bulging inwards of the ischial spines upon a broad base, while straight lateral walls from the inlet maintain a wide intertuberous diameter at the lower level. In other cases, convergence may involve the ischial spines and the tuberosities, and the entire lateral wall may slope inwards to create a funnel-shaped fore-pelvis.

A narrowed biischial diameter by itself is not an index of decreased pelvic capacity, for in the otherwise normally shaped pelvis there is compensatory space which is available to the foetal head. When the walls of the pelvis converge, however, the foetal head may be held in the plane of the narrowed interspinous diameter, and this may lead to a serious form of arrest.

An accurate knowledge of the pelvic type will indicate the optimum method of delivery to be followed, and so assist the obstetrician in the method of delivery.

Since the shape of the anterior segment of the pelvic inlet may differ from the shape of the posterior segment, the obstetric position of the foetal head will be influenced according to the shape of the segment through which it descends (Figure 1). There are numerous exceptions to this rule, because head size and its reaction to the forces of labour achieved by moulding and flexion may prevent the expected adaptation. In broad principles, however, the position of the foetal head characteristically associated with each pelvic type can be explained for each axis of descent.

In the gynaecoid, platypelloid and android types of pelvis, the flat straight margin of the sacrum predisposes to a transverse position of the foetal head, if the axis of descent is in the posterior segment of the pelvis. In the anthropoid type of pelvis the transversely narrowed inlet, together with the sacral concavity, predisposes to an occipito-anterior oblique or posterior oblique position. In the combined types, as illustrated in diagrammatic form (Figure 1).

by the android-anthropoid type, a transverse position, rather than an occipito-anterior or posterior oblique position, is to be expected if the head descends close to the sacrum. This transverse tendency is produced by the straight android character of the sacrum of this mixed pelvic form. If, however, the head descends through the fore-pelvis, the influence of the posterior segment of the pelvis is removed, and the shape of the anterior segment determines the occurrence of anterior oblique, transverse or posterior oblique positions. The tendency is for the head to engage with its long diameters utilizing the largest pelvic diameters irrespective of the axis of descent.

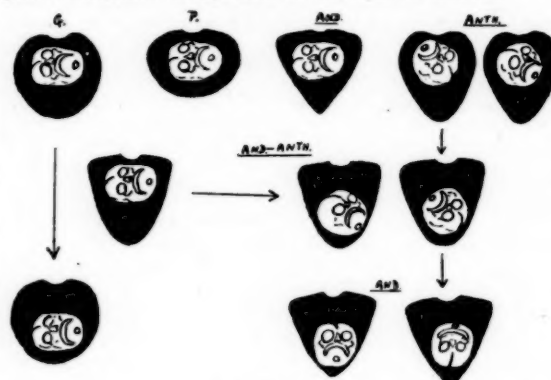


FIGURE 1.

Pelvic shape is important in the production of deep transverse arrest and deep posterior arrest of the foetal head. Transverse arrest is characteristically associated with the flattened posterior segment of the gynaecoid, platypelloid and android types. If the descent is through the fore-pelvis, a transverse arrest occasionally occurs in any primary type which displays a wide retropubic angle and presents a flat surface to the lateral aspects of the foetal head, bringing about adjustment to the transverse position. Such types of pelvis would have a gynaecoid or platypelloid anterior segment.

The arrested posterior position is characteristically associated with the anthropoid type of posterior pelvic segment when the head descends through the posterior part of the pelvis.

If the occipito-posterior position occurs with descent through the fore-pelvis, examination of the pelvis usually reveals a transversely narrowed anterior segment.

The probable mechanism of labour may be predicted by a study of pelvic type; but errors will occur, because it is impossible to determine before labour whether the head will descend through the anterior or posterior segment, though the latter is the more common. The position of the partly dilated cervix may suggest the axis of descent through the lower pelvic segment.

The percentage of each pelvic type occurring in Australian women has not yet been ascertained; but from casual observations already made, the figures will not differ materially from those already stated by Caldwell and Moloy.

#### The Gynaecoid Pelvis.

Spontaneous birth of an average-sized child in eighteen hours or under is commonly associated with the gynaecoid type of pelvis, and operative interference is rarely necessary in this normal group. The axis of descent is usually through the mid-pelvis, favouring the posterior pelvic segment. Occasionally the head descends through the fore-pelvis, in which event operative interference may become necessary. In the normal pelvis a narrow biischial diameter may cause an occipito-posterior position, if the occiput should rotate behind the ischial spines into the hollow of the sacrum.

#### The Platypelloid Pelvis.

In the platypelloid type of pelvis a transversely arrested head, as a rule, cannot be rotated manually because of the

proximity to the sacrum behind and to the symphysis in front. Accordingly, the head must be brought to a lower level in the pelvis in the transverse position and forward by so-called lateral flexion, so that anterior rotation can be accomplished with caput in sight. Forceful attempts at rotation at the level of the ischial spines may result in serious injury to the mother and to the child. True cephalic forceps application, though desirable, may be difficult in this type of pelvis. In true flat pelvis, the ischial spines and tuberosities as a rule cause no difficulty, as there is ample transverse space throughout the pelvis. Occasionally, flat pelvis occur in which the oblique diameters are slightly larger than the antero-posterior diameter. In such cases the head adjusts itself by the widest biparietal diameter, making use of the longer oblique pelvic diameter. Thus, an anterior oblique or a posterior oblique position may occasionally occur in the platypelloid type.

#### *The Android Pelvis.*

In the android type of pelvis, if the head enters the inlet through the posterior pelvic segment, it undergoes an adjustment to the transverse position. The foetal head may therefore tend to maintain a transverse position to a lower level. Attempts at anterior rotation are usually unsuccessful, because this movement is opposed by the flat posterior pelvic segment against which the lateral side of the head impinges. Descent, as a rule, continues with the head in the transverse position until the bottom of the posterior pelvic segment is reached. Rotation begins at this low level; but if the upper sacral region still opposes the frontal region of the head, lateral flexion into the fore-pelvis takes place until the head is sufficiently displaced from the sacrum for the frontal region of the head to be able to rotate under the promontory into the hollow of the sacrum. Rotation, in such circumstances, takes place on the inner aspect of the pubic rami, but at a low level with the caput in sight. If forceps are applied, care must be taken to allow the head to follow this mechanism. If the side walls of the pelvis are straight and the subpubic arch is wide, lateral flexion with forceps of the head in the transverse position enables the head to descend to a lower level in the same position. In the case of a transverse arrest associated with converging side walls and a narrowed interspinous diameter, it is mechanically wrong to attempt to deliver the head to a lower level in this same position. It is important to effect at least an anterior oblique position before traction is attempted, or serious soft part injury will result as the head is brought into contact with the ischial spines.

Occasionally an android type of pelvis which is flat at the inlet and has converging side walls will be encountered. In such types anterior rotation is advisable, if possible, before traction is attempted. If descent should occur through the anterior segment of the typical android type of pelvis, a spiral adjustment of the head occurs to conform to the narrowed retropubic angle. Transverse arrest in the forepart of the android type of pelvis with a gynaeoid anterior segment would require traction downwards and backwards in the transverse position before anterior rotation could be accomplished. Such a pelvis has straight lateral walls and a wide subpubic angle.

#### *The Android-Anthropoid Pelvis.*

The android-anthropoid pelvis introduces the bad features of both the android and anthropoid types. If the foetal head descends through the posterior segment, the transverse position may be assumed, and if the lateral walls are convergent, the interspinous diameter will be decreased. Transverse arrest may occur at the level of the spines, and anterior rotation of the head to utilize the larger antero-posterior diameters in the lower part of the pelvis is necessary even with a relatively small foetal head. If the foetal head is of average or relatively large size, Caesarean section is probably the safest procedure in the presence of this type of pelvis.

Occipito-posterior positions are also common in the android-anthropoid type of pelvis. In order to assume the occipito-posterior position, the head must descend through

the centre of the pelvis until the influence of the flat posterior pelvic segment is passed and the narrow frontal diameter of the head is permitted to coincide with the narrow angle of the fore-pelvis. In this event, the occipital portion of the head has sufficient space to lie in the posterior oblique position in spite of the shape of the posterior pelvic segment. Because of the proximity of the brow to the posterior aspects of the symphysis, the head is usually well flexed and moulded, so that manual rotation can be easily effected after elevation of the head, owing to the space available in the posterior pelvic segment.

It has been stated by Caldwell and Moloy that in a relatively high percentage of cases a head in the occipito-posterior position arrested below the mid-pelvis will be found in a pelvis with a relatively long antero-posterior diameter complicated by a variety of factors in the lower segment, such as a deep true pelvis, converging side walls and sharp ischial spines, a narrow fore-pelvis from inlet to outlet, or a forward position of the lower part of the sacrum.

#### *The Anthropoid Pelvis.*

If, in the typical anthropoid type of pelvis, there should be a wide subpubic angle and straight side walls, the arrested head in the occipito-posterior position can usually be rotated, because there is no obvious narrowing in the lower segment of the pelvis at the outlet.

If, in the same pelvic type, the side walls converge, the ischial spines converge, the true pelvis is deep and the subpubic arch is narrow, but a reasonable sacral concavity and backward inclination are present, manual rotation will probably be impossible; yet because of the sacral concavity and backward inclination, gentle traction upon the head in the direct occipito-posterior position may be applied and the head drawn down to the outlet, where rotation will be effected with caput in sight. In this particular type of anthropoid pelvis, delivery may be accomplished by version and breech extraction, or by elevation of the head to the inlet and manual rotation.

In the anthropoid type of pelvis, rotation of the foetal head to an occipito-anterior position must be completed, or the head must be left in the original occipito-posterior position. Its position should never be converted to a transverse position as in other types of pelvis, because it is mechanically wrong to deliver a head with the longest axis coinciding with the smallest pelvic diameter.

#### *The Importance of the Pelvic Type.*

It is important to recognize the type of pelvis whenever a posterior position is encountered, because the mechanism of the forceps delivery is largely dependent upon the basic pelvic type. Posterior positions of a minor degree may occur in the android and platypelloid types of pelvis, as well as in typical anthropoid types. In the android and platypelloid types, the head should be rotated to a transverse position, forceps should be applied, and the head should be brought to a lower level in the transverse position. If, however, the pelvis conforms to the anthropoid type, it may not be advisable to cause descent in the transverse position to a lower level unless the transverse diameters are wide.

If the pelvis is adequate for the head to descend to the pelvic outlet, the outlet is adequate for the passage of the foetal head, and a knowledge of the pelvic shape at this level may simplify the mechanism of delivery. The shape of the outlet in front of the sacral tip may conform to the long oval, round, flat and wedge-shaped types, irrespective of the inlet type. In the event of arrest of the head at the level of the bony outlet, pelvic shape is sufficiently important to warrant a determination of its form by vaginal examination before delivery.

#### *Conclusion.*

I have ventured into the field of obstetrics with some trepidation, and I ask that errors and omissions be excused. Nevertheless, I believe that the radiological study of pelvic type is of great clinical value, and cannot but assist the obstetrician to select the correct method of approach in the potentially difficult obstetric case.

## Reports of Cases.

### MUMPS MENINGO-ENCEPHALITIS.

By J. HAMILTON SMITH,  
Squadron Leader, Medical Section, Royal Australian  
Air Force.

THE following is a summary of three interesting clinical cases that were observed during November and December of 1943 at a Royal Australian Air Force station in New South Wales. These months witnessed a local epidemic of mumps amongst recent entrants to the service, as commonly occurs in the springtime in this group of individuals. As these cases proved instructive to me, it is hoped that they will be of some interest to my colleagues in the forces.

#### Clinical Record.

##### First and Second Patients.

The first two patients were examined originally on the same day, November 15; they were males, J.W.W., aged twenty-nine years, and V.C.B., aged thirty-eight years. Both patients complained of almost identical symptoms commencing fairly suddenly at very nearly the same hour. Briefly, their story is as follows. Forty hours before admission to hospital, each patient began to complain of increasingly severe and persistent headache, interfering with sleep and accompanied by nausea and retching; no other symptoms were elicited by questioning. Examination revealed the patients to be depressed, preferring quiet and complaining of mild photophobia. In each case the temperature was approximately 99.3° F. and the pulse rate 95 per minute; the fauces and palate were injected. There was a mild degree of neck stiffness in both cases, but Kernig's sign was not elicited. No other abnormal clinical signs were recorded.

Lumbar puncture was performed upon J.W.W.; this revealed macroscopically clear cerebro-spinal fluid under increased pressure, which was not measured. With the microscope, pleocytosis, recorded as polymorphonuclear (see later comment), was found; the number of cells was recorded as "many cells per high power field in the uncentrifuged specimen". A provisional diagnosis of meningococcal meningitis was made in both cases, and the administration of sulphapyridine with associated treatment was commenced. The patients were then transferred to a base hospital.

Here, the same provisional diagnosis was made; the temperature had risen to 101° F. in both cases, otherwise the findings were similar. The original cerebro-spinal fluid specimen of J.W.W. was reexamined, and the same microscopic findings were recorded, and in addition the protein content was noted as 50 milligrammes per 100 cubic centimetres of fluid. No organisms were seen in the specimens; a later attempt at culture yielded no growth. Cerebro-spinal fluid was also obtained from V.C.B.; the fluid was clear and contained occasional lymphocytes and a normal amount of protein. Attempted culture yielded no growth of organisms.

Sulphapyridine therapy was then continued in large amounts and was finally discontinued on November 24. In both cases improvement was only gradual, V.C.B.'s progress being retarded by bouts of vomiting and headache, persisting until November 22.

The temperature of both patients fell to normal limits after three days; the pulse rate became normal after thirty-six hours, after a moderate, short-lived bradycardia. No later significant pulse rate changes occurred; but subsequent spasmodic peaks of fever were observed in the case of V.C.B. on the sixth, tenth and twelfth days, and in the case of J.W.W. on the eighth day.

And then there appeared, on November 24, the elusive "nigger in the woodpile"; J.W.W. presented to his medical attendants an obvious unilateral parotid gland enlargement; V.C.B. was disappointing, in that in this particular he failed to follow suit, being discharged from hospital, well, on December 9; J.W.W. was discharged on the same day.

Further investigations had been limited to an examination of J.W.W.'s blood on November 25; this revealed a normal haemoglobin value, a number of erythrocytes estimations, and a leucocyte count of 10,000 cells per cubic millimetre. In the differential count neutrophil cells reached 53%, lymphocytes 31%, eosinophil cells 8% and basophil cells 1%, and 7% were listed as "missing".

#### Third Patient.

On November 17, two days after the admission to hospital of the above patients, a male patient, aged twenty-six years, W.H.T., "reported sick", complaining of general malaise, dry cough, headaches with stiffness of the neck and vague aching in the limbs. The patient lay typically curled up in bed and obvious meningeal signs were demonstrated, including a faint macular rash on the trunk and arms that faded in twenty-four hours. The cerebro-spinal fluid was turbid, and typical pressure and microscopic changes were present, including intracellular diplococci, demonstrated by culture to be meningococci. The subsequent clinical course was that of a moderately severe meningococcal infection, there being no relapses or subsequent rise in temperature.

#### Comments.

1. It would appear that an earlier confident, accurate diagnosis should have been made in the first two cases; nevertheless, it is questionable whether many would have been sufficiently bold to withhold sulphapyridine, at any rate initially. Similar cases reported by Frankland in 1941, including similar "missed" cases, indicated that sulphapyridine therapy somewhat delayed recovery of these patients.

2. Frankland found that the cerebro-spinal fluid pressure was not raised in his cases, that the pleocytosis was, of course, lymphocytic. It is clear that the recording of polymorphonuclear cells in the cerebro-spinal fluid of J.W.W. by two examiners was a sorry and confusing error. The eosinophile percentage recorded is strange.

3. It has been stated by some authors that an increase in the cells in the cerebro-spinal fluid occurs in 50% of cases of mumps; others hold that it occurs in but 0.1%.

4. An American author puts forward the conception of a particular neurotropic strain of the infecting virus, from consideration of the preponderance of central nervous symptoms and signs in occasional epidemics.

#### Summary.

Two cases of primary mumps meningo-encephalitis and one case of meningococcal meningitis, occurring in provocative association, are described, with a few comments.

#### Acknowledgement.

Acknowledgement is made to the Director-General of Medical Services, Royal Australian Air Force, for permission to publish these notes.

#### Bibliography.

A. W. Frankland: "Mumps Meningo-encephalitis". *British Medical Journal*, July 12, 1941, page 48.

### THORACIC ACTINOMYCOSIS IN A CHILD: RESPONSE TO PENICILLIN.

By FELIX ARDEN, M.D., M.R.C.P.,  
Medical Superintendent, Brisbane Children's  
Hospital.

ACTINOMYCOSIS of the chest is a rare disease of children, and until recently recovery from such a condition would have been a very unusual event indeed. Within the last few years, however, there have been reports of actinomycosis in various situations successfully treated with sulphonamides, and the value of these drugs is now well recognized.

The employment of penicillin is very recent. Early in 1943 Herrell,<sup>(1)</sup> at the Mayo Clinic, mentioned that clinical trials were being undertaken with the new drug because of its known activity against *Actinomyces bovis*. Almost simultaneously Florey and Florey<sup>(2)</sup> reported its therapeutic use on two patients, one with actinomycosis of the lung, one with a pelvic abscess. Although in these two cases the fungus was still present (in sputum and pus respectively) a week after the cessation of treatment, the results cannot be considered informative because of the method of administration of the penicillin, which would now be considered inadequate. (In one instance it was given every four hours by duodenal tube, in the other every twelve hours by intravenous injection.)

In December 1943, Lyons<sup>(3)</sup> published a report on the penicillin therapy of 209 surgical infections. The list included four cases of actinomycosis which were stated to have improved under the treatment. No details were given.

An annotation on the chemotherapy of actinomycosis in *The Lancet* of June 10, 1944, refers to the observations of Lyons and hints that penicillin may become the drug of choice in the treatment of this disease. Nevertheless few clinical reports are yet available. Because of this, and because the effect of penicillin in this instance was so dramatic, the following case is put on record.

#### Clinical Record.

K.M., aged ten years, was admitted to the Brisbane Children's Hospital on November 21, 1944, because of a lump in the chest. The swelling had been discovered a week earlier and was growing larger. For about five weeks prior to its appearance the child had complained of a dull ache in that region, with more acute pain on laughing or deep breathing. Her mother said that she had lost her appetite and was growing thin.

She was a tall, thin, sallow girl, with a temperature of 100.6° F. Just below and lateral to her right breast was a hemispherical swelling about two and a half inches in diameter, which was very hard, except for a small fluctuant area in the centre, and not particularly tender. This mass was firmly fixed to the underlying ribs and also to the skin, which was a purplish-red colour over its surface. Further examination of the chest revealed limitation of the respiratory excursion on the right side, with impairment of the percussion note and diminished breath sounds for some distance beyond the edges of the swelling.

An X-ray photograph demonstrated the outlines of the mass in the chest wall and also a good deal of opacity in the right mid-thoracic region. The radiologist was unable to state whether the pathological process had originated within the chest or in the chest wall. A subsequent film revealed some bony destruction of the anterior portions of the fifth and sixth ribs. The child was found to have a red cell count of 4,200,000 per cubic millimetre and a leucocyte count of 16,000 per cubic millimetre, 74% of the leucocytes being neutrophilic cells.

On the following day the small fluctuant area in the centre of the swelling was aspirated, but only a few drops of thick pus were obtained. No cultures were grown from this material on ordinary media.

Three days later the swelling, which had grown a little larger in the interval, was investigated surgically under general anaesthesia. It consisted of a small abscess cavity containing about half an ounce of pus surrounded by a thick, oedematous, fibrous wall. A portion of the sixth rib, denuded of periosteum, was exposed at the bottom of the cavity, but no communication with the pleura was evident. A fragment of the abscess wall, excised for histological examination, consisted only of fibrous granulation tissue, but the pus contained a number of "sulphur granules" and felted masses of mycelium typical of actinomycosis. No other organisms were seen and no culture was grown.

Treatment with penicillin commenced on November 28, a week after the child's admission to hospital and three days after the operation. The penicillin was administered simultaneously by two routes: intramuscularly in doses of 10,000 units every three hours, and directly into the small abscess cavity in a solution of 500 units per cubic centimetre as a daily irrigation. No other treatment was given.

Almost at once the swelling in the child's chest wall started to diminish in size, the shrinking taking place at the expense of the thick indurated walls of the actinomycotic abscess. The actual cavity became obliterated more slowly, so that from having a small abscess in the centre of a large indurated mass the child reached a stage when the tumour had disappeared, but there still remained a flat, shallow, subcutaneous cavity, about one inch in diameter, into which the tip of a catheter could be passed. This finally closed three weeks after the commencement of treatment, daily penicillin irrigations having been continued until it was no longer possible to introduce any solution. The intramuscular injections of penicillin had been stopped on December 13, a total of 1,200,000 units having been administered over a period of fifteen days. After penicillin therapy was stopped sodium iodide, ten grains, was administered thrice daily in a mixture for the next two months.

Meanwhile an X-ray film taken on December 6 showed remarkable clearing of the opacity in the peripheral part of the right lung field, although some shadow remained.

When reporting progress on January 12, 1945, the child seemed to be completely cured. She looked and felt well, had no cough and no pain in the chest wall. There was no vestige of tumour to be felt. Only the linear scar of the incision into the abscess cavity remained, and this scar and the surrounding skin which had been previously fixed to the ribs was again freely movable. Her latest X-ray film, taken on March 2, shows no residual shadow.

#### Comment.

It has been stated that actinomycosis of the chest is a rare disease in children. Records of the Brisbane Children's Hospital include only one other case of pulmonary actinomycosis among approximately 28,000 admissions during the past five years.

Except when there has been local trauma to the chest wall with direct implantation of the fungus therein, it is probable that the infection originates in the lung and migrates outwards, involving the pleura, ribs, intercostal muscles and finally the skin. This child had sustained no cutaneous injury, but it will be recalled that she suffered local pain for about five weeks prior to the appearance of the swelling. This symptom, taken in conjunction with the pulmonary opacity, leaves little doubt that her infection began in the lung and involved the chest wall secondarily. It seems to be a feature of actinomycotic infections that they ignore anatomical boundaries and spread by continuity.

The treatment of an actinomycotic lesion by surgical excision is seldom possible. In this child's case, owing to the involvement of the lung and pleura, it was out of the question, and apart from surgical drainage it was necessary to rely upon chemotherapy. The total disappearance of the swelling and the substantial clearing of the X-ray shadow within three weeks must be attributed to the penicillin, as no other drug was administered.

It is as yet too early to judge whether the cure has been permanent. The child is being kept under observation, and at the present time, five months after the cessation of treatment, there has been neither local, radiological nor systemic evidence of recurrence.

#### References.

- (1) W. E. Herrell: "Further Observations on the Clinical Use of Penicillin", *Proceedings of the Staff Meetings of the Mayo Clinic*, Volume XVIII, March 10, 1943, page 65.
- (2) M. E. Florey and H. W. Florey: "General and Local Administration of Penicillin", *The Lancet*, March 27, 1943, page 387.
- (3) C. Lyons: "Penicillin Therapy of Surgical Infections in the U.S. Army", *The Journal of the American Medical Association*, Volume CXXIII, December 18, 1943, page 1007.

## Reviews.

### X-RAY DIAGNOSIS AND THE URINARY TRACT.

A USEFUL little "Handbook of Roentgen Diagnosis" called "The Urinary Tract" is one of the series being published by The Year Book Publishers, Incorporated (Chicago), and is edited by Dabney Kerr and Carl L. Gilles, of the State University of Iowa. The arrangement of the subjects is good and the index allows of ready reference to any particular condition of the urinary tract which is likely to be met with in practice. The authors stress the importance of the correlation of all clinical and laboratory data with the X-ray findings before a final diagnosis is made. The excellent reproductions of skiagrams are in the "negative" and are therefore much easier to follow both by the expert and by the occasional worker. The reproductions are also enhanced in value because they have not been retouched before printing. The contents are arranged under the anatomical headings of the kidneys, ureters, bladder and urethra. The importance of correct technical procedures is insisted on: immobilization by bands, correct technical factors, careful posturing and the taking of sufficient films are necessary for success. The authors point out that the retrograde pyelogram is superior to pyelograms produced by the excretion method as better filling of calyces and pelvis is obtained. The excretion method is of value as a test of excretion. From a series of pictures of the normal, the authors pass on to illustrate anomalies and later pathological conditions including calculi. The differential diagnosis of many shadows likely to be mistaken for renal pathology is dealt with clearly and satisfactorily. In bladder disease the plain film, the opaque cystogram and the air cystogram are used as considered necessary and films are taken obliquely to

<sup>1</sup> "The Urinary Tract: A Handbook of Roentgen Diagnosis", by H. Dabney Kerr, M.D., and Carl L. Gilles, M.D.; 1944, Chicago: The Year Book Publishers, Incorporated. 8" x 5½", pp. 320, with many illustrations. Price: \$5.50.

rule out various extravascular lesions. Urethral and prostatic investigations are described, and, as in the rest of the work, the illustrations are excellent. Altogether this is a most important book of reference and the clinical notes combined with the first-rate illustrations should be of the greatest value to urologists and radiologists.

#### THE TREATMENT OF SYPHILIS.

THE third printing of the second edition of "The Modern Treatment of Syphilis" by Joseph Earle Moore brings information up to the threshold of penicillin therapy.<sup>1</sup>

Penicillin is not mentioned, for when this monograph was printed it had no place in practical antisymphilitic therapy. Even today, with an ever-increasing number of syphilitic infections being treated with penicillin, it must still be considered on trial so far as its use in syphilis is concerned, for time alone can truly assess the efficacy of any particular antisymphilitic drug or scheme of treatment.

This volume is up to date so far as the presentation of well-investigated methods is concerned.

When the first edition was reviewed in these columns about eleven years ago, it was stated that it was an ambitious undertaking and that it should be a successful one, as the book was eminently practical and covered the field of antisymphilitic treatment very fully. It has been successful, and the edition under review maintains the high standard aimed at by the author. The approach to the subject is along accepted lines, and all that need be known in regard to modern treatment is set out clearly with the aid of numerous tables and diagrams. Some of the diagrams in the final chapter are difficult to read against the squared background, but this is a minor matter.

In the chapter dealing with the appraisal of therapeutic problems the author considers many important factors, such as the influence of race, sex, age, the invading organism, collateral influences and the mental reactions of patients to the disease and its treatment. The patient is considered as an individual and not as part of a herd. This outlook is important and is too frequently ignored in days of mass treatment.

About one hundred pages are devoted to drugs used in the treatment of syphilis and to their reactions. Most of the untoward effects are produced by the arsenicals and the majority of them are preventable if the practitioner is informed and alert.

Bismuth injections are responsible for very little trouble. In regard to mercury, a drug which held its place for more than four hundred years, the author claims that the clinician "is so rarely called upon to employ the drug that the space in this text which may be devoted to describing it may be reduced by three-fourths without material loss from the practical standpoint". This would reduce it to about two and a half pages. One wonders if, in the near future, the same may be said of the arsenicals. If mercury is used at all in the treatment of syphilis it is considered that administration by inunction is the best method.

The iodides receive brief notice. They have an undoubted healing power in late syphilis, and it is believed "that they still have a place, even if a humble one, in the management of most patients with syphilis".

In the treatment of early syphilis four arsenicals are considered—arsphenamine, nearsphenamine, silver arsphenamine and "Mapharsen". Sulpharsphenamine is not to be considered, because of its relatively high toxicity, unless intramuscular administration of all drugs is necessary, and "Bismarsen" is ruled out because of its relatively low therapeutic efficiency.

The author finds it more difficult in this edition than in the first to be dogmatic as to the best arsenical drug for early syphilis. While he still "believes that arsphenamine is the most efficacious, it seems clear that mapharsen (and perhaps other arsenoxides to come) is preferable to nearsphenamine in all respects". Summed up, the position is that "the arsphenamine arrow has practically disappeared from the syphilotherapist's quiver in all except early syphilis; nearsphenamine is justly disappearing in early

syphilis and is reserved for late syphilis alone; mapharsen, or some other arsenoxide, may take the place of both of them in early and late syphilis alike".

The treatment of cardio-vascular syphilis and neurosyphilis is covered in detail. Fever by induced malaria is discussed very fully and electropyrrexia in less detail.

The chapter dealing with the interpretation of serological tests is valuable, as is the warning in the panel at its close "treat the patient, not his blood test".

The intensive arsenotherapy of early syphilis is still regarded as carrying with it an excessive risk. "A treatment which simultaneously cures the disease and kills the patient is, to put it mildly, undesirable." In view of the fact that "spontaneous" cure is frequent and that about 65% of untreated patients live unaffected by their condition, the author considers that treatment carrying with it a substantial risk of immediate death is unjustifiable.

The closing chapter deals with venereal disease control in the United States Army and Navy. It is claimed that "if the 1942 venereal disease incidence rates are not significantly lowered there would be, among 9,000,000 men in the armed forces, 360,000 fresh infections per year, accounting for 7,200,000 lost man days. This is equivalent to loss from the guns of the entire time of 20,000 men for one year; and puts out of action the equivalent personnel of two armoured divisions or ten aircraft carriers". Since the publication of this book methods of treatment in the services have considerably changed and are in advance of what might have been expected in time of peace, and if "follow up" is adequate the post-war damage due to venereal disease acquired during war should not be of great magnitude.

The bibliography throughout, at the end of chapters, is purged of old articles and contains references up to 1943.

It should be remembered that this is a monograph on treatment. As such it has maintained its high standard and well merits its place among books of value dealing with syphilis.

#### PROGRESS IN ENDOCRINOLOGY.

IN the fifth edition of "Recent Advances in Endocrinology", A. T. Cameron, Professor of Biochemistry, University of Manitoba, gives a brief but very complete summary of modern views on this subject.<sup>1</sup>

The average reader will find some new knowledge, such as the part played by parathyroid hormone in the control and excretion of phosphate, clearer knowledge of the steroid hormones of the adrenal cortex, evidence suggesting that the posterior lobe of the pituitary produces only one hormone, *et cetera*.

The author rightly draws attention to the frequent erroneous diagnosis of Fröhlich's syndrome, which is a relatively rare condition. The true Fröhlich's syndrome presents the concurrent onset of diminution of vision leading to blindness of one eye, infantilism and obesity associated with a tumour of the pituitary or region of the pituitary. The commonly seen over-fat boy has no craniohypopharyngioma which is destroying his pituitary. He usually grows into a healthy robust man without special treatment.

Similarly the author points out that Simmonds's disease is too often diagnosed when the patient is suffering from *anorexia nervosa*; a table is given showing the points of differential diagnosis between these two states.

The question of basal metabolic rate is discussed as an aid in the diagnosis of hyperthyroid and hypothyroid states, and it is pointed out that, although the rate is standard in all races and climates, it can be depressed or raised by factors other than pathological thyroid states and therefore may be misleading. It is suggested that blood iodine values may give a better indication of hyperthyroidism. Most clinicians who have been too often misguided by basal metabolic readings will agree with this statement.

For a 1945 edition the paucity of information on treatment of thyrotoxicosis by thiourea or thiouracil is a disappointing feature.

Each section has a very full bibliography which is indicative of the thoroughness of the work.

<sup>1</sup>"Recent Advances in Endocrinology", by A. T. Cameron, M.A., D.Sc. (Edinburgh), F.R.I.C., F.R.C.S.; Fifth Edition; 1945. London: J. and A. Churchill Limited. 8" x 5", pp. 422, with 90 illustrations. Price: 18s.

<sup>1</sup>"The Modern Treatment of Syphilis", by Joseph Earle Moore, M.D., with the collaboration of Jarold E. Kemp, M.D., Harry Eagle, M.D., Paul Padgett, M.D., Mary Stewart Goodwin, M.D., Frank W. Reynolds, M.D.; Second Edition, 1941; third printing, 1944. London: Baillière, Tindall and Cox. 9 1/2" x 6 1/2", pp. 729. Price: 38s. 6d.

# The Medical Journal of Australia

SATURDAY, MAY 26, 1945.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

References to articles and books should be carefully checked. In a reference the following information should be given without abbreviation: initials of author, surname of author, full title of article, name of journal, volume, full date (month, day and year), number of the first page of the article. If a reference is made to an abstract of a paper, the name of the original journal, together with that of the journal in which the abstract has appeared, should be given with full date in each instance.

Authors who are not accustomed to preparing drawings or photographic prints for reproduction are invited to seek the advice of the Editor.

## INDUSTRIAL HEALTH RESEARCH.

In the year 1942 the Medical Research Council of the Privy Council in Great Britain decided to extend the scope of the Industrial Health Research Board. It had up till that time been trying to discover the best conditions for the maintenance of health and efficiency in industry; according to the extended terms of reference it was to be concerned with the whole subject of industrial medicine and disease. This meant that some of the work carried out by the Medical Research Council was transferred to the new body. In order to allow the Industrial Health Research Board to deal with the subject in its entirety the Medical Research Council established at the London Hospital a Department for Research in Industrial Medicine and appointed as physician-in-charge Dr. Donald Hunter, one of the physicians of the hospital. This provides, as Dr. Hunter has claimed, a complete organization for research in industrial medicine. Perhaps the best indication of the ability of the Industrial Health Research Board to achieve its objectives is its personnel, which includes scientists and representatives of employers and of trades unions.

Industrial health research was the subject of a conference called by the Industrial Health Research Board last September. The conference lasted for one day and the proceedings have been published.<sup>1</sup> The report will take its place with other wartime publications of the Industrial Health Research Board, some of which have been discussed in this journal. Repeated reference to this subject is necessary and will continue to be needed until employers, employees and the general public understand what industrial medicine means and demand that its benefits shall be applied to every industrial undertaking.

<sup>1</sup> "Health in Industry", Proceedings of a Conference on Industrial Health Research at the London School of Hygiene and Tropical Medicine, 28th September, 1944; Medical Research Council, Industrial Health Research Board. London: His Majesty's Stationery Office; 1945. 93" x 6"; pp. 27. Price: 6d. net.

In March of last year industrial medicine and the future were discussed in these pages in the light of an account of a conference called by the Factory and Welfare Department of the Ministry of Labour and National Service of Great Britain. Stress was laid on that occasion on the work of factory medical officers and on their essential interest in the industrial processes of the factories that they are called upon to visit. Another aspect to which prominence was given was that on which Dr. C. Hill, Secretary of the British Medical Association, had some forceful views. He maintained that it was a national obligation to see that factory environment was as well cared for as the non-factory environment and that an industrial medical service should not be left purely as an employer's service. While it was so left, it would, he declared, remain haphazard, incomplete and incapable of great development, and it would never cover that great section of industry where it was most needed. According to the views expressed at the conference last September, employers and employees in Great Britain do understand the application of preventive medicine to industry. If this is true, Dr. Hill may before long see the national effort for which he contends.

At the September conference the chairman of the first session, Sir Edward Mellanby, who is secretary of the Medical Research Council, gave an address on the work of the Industrial Health Research Board. He spoke of the value of widely representative conferences as affording opportunities for spreading knowledge on research matters. He then went on to show that research workers on industrial health had only one object in view—to obtain facts and elucidate problems in order to improve conditions in industry. They had no ax to grind and no particular interest in one side of industry more than another. He maintained that the work of professional research workers was only a part of the investigation needed in industry. Medical officers associated with industry had to take their share of the work. This contention is in accord with the arguments advanced in our discussion in March of last year. Mellanby holds that the development and application of the facts discovered must depend on industry itself, since the research worker is unable to undertake administrative action of any kind. Research work can only be a "spearhead", a "spearhead without a shaft"; it is no good whatever unless there is somebody to hurl it. Dr. Donald Hunter followed the opening address with an account of the development and the work of the new Department for Research in Industrial Medicine at the London Hospital. He made a plea for the endowment of chairs in industrial medicine. The third speaker was Lord Forrester, managing director of the Enfield Cable Works, Limited, who discussed industrial research from the point of view of management. In his opinion the fundamental problem before the conference was the health of the individual in a healthy environment rightly integrated, and then the right integration of the industrial unit or group of units with the community to which they belonged. It was not logical to separate one from the other—they were parts of one essential whole. Lord Forrester said that the full employment which had come during the last few years had caused a change in the outlook of industry. The continuance of this as envisaged in the White Paper would provide the principal requisite to tremendous advance in the development of the relationship between

the human being and his environment. The kind of research really important at the moment was research into management and the teaching of management, and also research into the wider application of the knowledge already won by scientific groups. He said that he would welcome the establishment of younger-minded research teams, working on the practical problems of the application of knowledge. Lord Forrester then went on to name some of the problems that he would put to such teams. The first problem had to do with the problem of posture in industry. In the future it would be necessary to design processes, as tanks and aeroplanes had recently been designed, with the position and the comfort of the operator in mind and not just the purely technical requirements of the process itself. Many persons of discernment would probably agree with Lord Forrester and declare that they were dismayed when they saw an astonishing lack of thought going into the ordinary question of sitting or working positions in factories. Lord Forrester's second request to research teams would be for the devising of a satisfactory method of keeping industrial health and personnel records. Among these records would be a health record accessible only to the industrial medical officer or other qualified person connected with the factory. The third problem named was the problem of working time, of breaks in working hours and of the organization of shift work. "I believe", Lord Forrester said, "we are flogging dead horses when we talk of the 40-hour week or 8-hour day, or of any other week or day. I believe that at the least we ought to think in terms of the year. Whether it is a 2,000-hour year, or what it should be, I am not prepared to say, but the spacing and duration of breaks in that year must be vital to health." The speaker's fourth problem was a universal one that applied to every factory—the problem of sanitation and hygiene. He referred to factory lavatories. He said that a manager could be recognized as a good manager by his willingness to take a visitor to the lavatories or not; "and when one gets there, one finds, time and again, architectural, engineering and hygienic monstrosities perpetuated in the name of sanitation. . . . The tone of a factory is very often connected with the tone of the lavatory. . . ." Lord Forrester's last problem had to do with the relationship of the physical environment of industry itself to its environment. The town planner would have to come into this question with the industrialist and the hygienist. It will be clear that quite a long essay could be written on almost all the problems named. Others might possibly be suggested. Lord Forrester would like to see a clean sweep made of all industrial propaganda of the wrong kind. For some reason or other he seemed reluctant to express such an idea, but most people will agree with him. To combat mismanagement and other industrial evils he advocates "the wider and more intelligent dissemination of information, using the best possible minds grouped together to put it across in simple form, and using the best possible technique of presentation, so that it is pleasant to read and entices one to read it". The next speaker was Mr. G. A. Isaacs, M.P., General Secretary of the National Society of Operative Printers and Assistants, and Chairman of the Workmen's Compensation and Factories Committee of the Trades Union Congress, who discussed industrial health research from the point of view of the trades unions. It may be remarked that some of the views expressed by Lord Forrester were of a kind that some persons might

expect to hear from a trades union representative. The same kind of person would probably expect to hear Mr. Isaacs's views put forward by someone connected with the management. After describing some of the struggles of the trades unions in the matter of industrial diseases, Mr. Isaacs referred to the British Medical Association's report on industrial health in factories and quoted the following sentence as something which the trades unions had urged for generations: "When a worker takes up employment in a factory he has a right to expect that adequate precautions will be taken to safeguard his health, his safety and his welfare." The views of Mr. Isaacs on industrial research would do credit to the editorial pages of an up-to-date medical journal. He pleads for adequate staff and equipment, including premises and accommodation; he opposes isolation of workers and would give them frequent and regular consultation with one another; ample money should be provided and the results of research should be conveyed without delay to everyone concerned. "Research will cost money, but less than the cost of no research. Research has been freely called upon in our war effort, to take lives; we want it to save lives." The final contribution to the conference by Professor F. C. Bartlett, describing the work of the unit for applied psychology at the University of Cambridge, can just be mentioned.

From this brief account of the conference of last September it will be clear that many influential people in Great Britain are thinking and working on sound lines. It may well be that the lessons learned by industry in the conduct of the war will mark a starting point for progress in the post-war period. Every effort to prevent a relapse must be made by all persons with understanding of the subject, whether they are employers, workers or medical hygienists attached to industry. Whether the work should be accepted as a national obligation, as Dr. Hill would have it, or whether the "spearheads", as Sir Edward Mellanby calls them, should be gathered up and used by those connected with industry, may be open to argument. If industry would do it, all connected with the work would benefit much more than if they were compelled by an administration, however intelligent it might be. In Australia at present the need is for the continued instruction, conviction and education of employers, workers and doctors in what is already known and for extensive and whole-hearted research in all that is still obscure.

## Current Comment.

### GYNÆCOLOGICAL DISORDERS AND THE URINARY SYSTEM.

THE association of disorders of the female genital tract with a disturbance of urinary function is commonly recognized. The two sets of organs are so closely related developmentally and in the adult that it would be surprising if they were not from time to time involved in the same infection. Some interesting questions arise when the influence of disease of the genital organs on the urinary system is considered. In a paper read at a joint meeting of the Section on Obstetrics and Gynecology and the Section on Urology of the American Medical Association at the annual meeting of that body in 1944, J. M. Hundley, junior, and W. K. Diehl discussed the influence of gynecological disorders on the urinary system.<sup>1</sup> They

<sup>1</sup> *The Journal of the American Medical Association*, March 10, 1945.

deal with the subject from three points of view—first, pressure and its effect on the urinary tract, secondly, the effect of parturition in the production of pathological changes of the urinary tract, and thirdly, the influence of pelvic infections on the urinary tract.

The first condition that comes to mind in regard to increase of pressure in the female pelvis is pregnancy, and our authors refer to a study made by one of them with certain collaborators in 1935 on the physiological changes occurring in the urinary tract during pregnancy. It is generally recognized that in the early stages of pregnancy the urinary tract manifests certain changes. By the end of the second month both ureters are found to be affected by loss of tone and slight dilatation. This loss of tone is shared by all visceral muscle during the early stages of pregnancy. When the uterus becomes an abdominal organ pressure on the atonic ureter causes further dilatation to occur. Dilatation may be associated with stasis. Stasis may exist apart from dilatation; and in any case reaches its maximum as a rule about the sixth month and diminishes later on. In the study mentioned by Hundley and Diehl 27 normal women were examined urographically during pregnancy and the puerperium. As well as dilatation, tortuosity and kinking of both ureters, dilatation of the pelvis and calyces of one or both kidneys was found. Atony of the ureteral musculature was also present. Dilatation of the ureter always began at the pelvic brim, and in no instance was significant dilatation found in the pelvic portion of the ureter. Hundley and Diehl believe that dilatation of the ureter is caused by hormonal action and also by pressure of the uterus. On microscopic examination they have found muscular hypertrophy of the ureter. This hypertrophy has also been found in a case of ectopic pregnancy when the uterus was too small to exert increased pressure. In further support of the contention that hormonal influences are at work in the production of these ureteral changes, Hundley and Diehl report experiments with diethylstilbestrol in which the changes were produced. They show that dilatation occurs in the urinary tract in the presence of large pelvic tumours, but add that in these circumstances the hormonal changes occurring in pregnancy are not seen.

The second part of Hundley and Diehl's discussion has to do with changes resulting from parturition. The lesions are described as "true hernias due to stretching and tearing of the fascial supports". Cystocele associated with prolapse of the uterus is of common occurrence; the stasis accompanying the condition predisposes the patient to cystitis. Hundley and Diehl also remind us that uterine prolapse, because of compression of the uterus, may take a prominent part in the production of hydronephrosis and hydroureter. The stress incontinence of urine of women who have borne children is all too common and a most troublesome condition to treat; its cause is always trauma during parturition. In the discussion on Hundley and Diehl's paper one speaker remarked that he was frequently consulted by women, the subjects of stress incontinence, who had never been pregnant, who were in the late forties or fifties, and who had no decided relaxation of the pelvic floor. As far as can be gathered this is not the experience of gynaecologists in this country.

In regard to the influence of pelvic infections on the urinary tract, Hundley and Diehl point out that without doubt chronic disease of the adnexa, with or without masses, causes pressure on the ureter and by inflammatory invasion produces stricture of the ureter. They refer to the work of Schreiber, who in 1927 showed that adnexal disease was one of the most common factors in the production of ureteral stricture. They carried out cystoscopy in the examination of fifty women, suffering from varying degrees of endocervicitis, most of whom had no urinary complaints. The urine of all the women was submitted to cultural examination, and in 48% cultures were obtained. However, in a control non-pregnant group cultures were obtained in 44% of cases. No doubt, as the authors suggest, the infection was due to the short and rather patulous urethra of the women. In the 50 cases in which cystoscopy was carried out cystitis and trigonitis were looked for; in 47 of the 50 cases no cystitis was found and in 34 no

trigonitis. The conclusion stated is that endocervicitis plays a very unimportant role in the production of bladder infections. This conclusion will not find ready acceptance by those who know of the work of Winsbury-White.<sup>1</sup> His findings were the opposite to those of Hundley and Diehl. Hundley and Diehl mention Winsbury-White's work, but do not attach much importance to it. They would appear to be a little too dogmatic on this point.

#### "HORSE SERUM" OR "EQUINE SERUM".

MANY authors deplore the modern tendency to use nouns as adjectives. The term "viral pneumonia" has been used in at least one discussion in these columns in preference to the ungrammatical "virus pneumonia";<sup>2</sup> and the editor of *The New Zealand Medical Journal* [sic] condemned expressions like "a mystery man in a luxury car" (a mysterious man in an expensive car), because, as he remarked, they lead to a "disuse atrophy" in the meaning of words.<sup>3</sup>

The controversy about compound nouns has never been finally settled, and has caused some vigorous correspondence in *Science*. William C. Boyd, a prominent immunologist, wrote a letter on arbitrary editorial changes in scientific papers.<sup>4</sup> He claimed that the use of the adjectival form often changed the meaning, and he gave such examples as "microscopic slide", "chesty specialist", "antigenic extract" and "bloody group". He quoted Jespersen as saying: "Mere position before another noun is really the most English way of turning a noun into an adjective, e.g., the London market, a Wessex man . . . a Gladstone bag, imitation Astrakhan." In search of further evidence, Boyd sent a questionnaire to about thirty persons who were either editors of journals in which papers on immunology often appear, or else were workers who had recently published several papers on immunology. Of these, 76% preferred "pneumococcus polysaccharide" to "pneumococcal polysaccharide", and 90% preferred "horse serum" to "equine serum", or "serum of the horse".

Writing in support of Boyd, S. Malkiel claimed that the English language is full of expressions like "fence post", "rat poison" and "medicine man".<sup>5</sup> He also argued that changing nouns to adjectives alters the meaning; thus "funeral parlour" means a parlour for funerals, whereas "funereal parlour" means a parlour which is "sad and solemn; dismal; mournful (and not necessarily used for funerals)". There is apparently eminent counsel on both sides, as well as room for the display of some common sense.

#### THE DISASTER OFF CAPE BARRENJOEY.

THE recently reported disaster off Cape Barrenjoey, New South Wales, in which a launch with a crew of young medical graduates and a medical student was wrecked, has shocked the medical community of Australia and threatens a serious loss to its ranks. Of the crew of six, only one has at the time of writing been found. He is Dr. Ian S. Collins, son of Dr. A. J. Collins, who graduated only the other day with first class honours. The five others are Dr. Archibald B. Pursell, of Mosman, Dr. John Ashley-Thompson, of Pymble, Dr. Richard King, of Gordon, Dr. George MacCallum, of Edgecliff, and Peter Whitehouse, a final-year student, of Strathfield. The sympathy of the medical profession is offered to the relatives of those who are missing.

<sup>1</sup> *The British Journal of Urology*, Volume V, 1933, page 289.

<sup>2</sup> *THE MEDICAL JOURNAL OF AUSTRALIA*, November 13, 1943, page 402.

<sup>3</sup> Editorial: "The Decay of Medical Language", *The New Zealand Medical Journal*, Volume XLI, December, 1942, page 235.

<sup>4</sup> W. C. Boyd: "Arbitrary Editorial Changes in Scientific Papers", *Science*, Volume XCIII, August 27, 1942, page 197.

<sup>5</sup> S. Malkiel: "Editorial Changes in Scientific Papers", *Science*, Volume XCIX, March 24, 1944, page 240.

## Abstracts from Medical Literature.

### DERMATOLOGY.

#### Perlèche.

C. W. FINNERUD (*The Journal of the American Medical Association*, November 18, 1944) has attempted to determine the nosological position of perlèche, a fissuring inflammation of the oral commissures, which has, since its original description and naming in 1885 by Lemaître, been considered a disease entity. The symptoms are essentially the same in children and adults, irrespective of aetiological factors. Subjective symptoms are mild, merely a feeling of dryness and at times a slight burning sensation. Deep infected fissures may be painful, and though rarely encountered, occur in adults with perlèche. The epithelium of one or both labial commissures appears early to be mother-of-pearl coloured, somewhat macerated, either adherent or easily detached and wrinkled. Later the wrinkles become deeper, forming fissures with red bases, with little tendency to bleed. Involvement usually stops rather abruptly just within the muco-cutaneous junction of the commissure, but extends as a localized erythematous scaling dermatitis, usually with fissuring, from a few millimetres to as much as two or more centimetres outward and downward from the angle of the mouth onto the skin. Untreated, the lesions of perlèche have a tendency towards spontaneous remission and exacerbation, but they rarely disappear completely. There always has been speculation as to the cause of perlèche, especially in children. It was long considered a disease entity of streptococcal origin. Others attributed the disorder to staphylococci, chiefly to *Staphylococcus aureus*. The author in 1929 reported 77 of 100 children suffering from perlèche in the same institution, in whom he isolated fungi, chiefly monilia. Similar findings have been reported by McLeod and others, chiefly in adults. Under the term "malocclusion perlèche", the author described the chronic, treatment-resisting fissures of the labial commissures, especially in elderly persons, the majority of whom have false teeth. These cases include those instances primarily of mechanical origin, not only those resulting from malocclusion caused by ill-fitting dentures, but also those resulting from the sagging of the tissues of elderly persons. Salivation caused by dentures also has an influence. Nippert and McGinty, under the title of "Riboflavin Deficiency versus Perlèche", described intertrigo of the labial commissures of adults as resulting most frequently from a narrowed bite, either because the natural teeth have been worn down or because of improperly fitting artificial dentures. They observed that the narrowed bite produces an additional fold at the labial commissure and that the skin in this area then, because of constant moisture from saliva, becomes macerated, fissured and infected. Under the heading "Vitamin Deficiency Perlèche", the author quotes the experimental work of Sebrell and Butler. They proved conclusively that symptoms, amongst others, identical to those long recog-

nized as those of perlèche, often result in human subjects from riboflavin deficiency, manifestations formerly described as "pellagra sine pellagra". It has been repeatedly demonstrated and stressed by Sebrell and Butler and others that vitamin deficiencies are usually multiple. This fact undoubtedly accounts for the common occurrence of perlèche in pellagra, the Plummer-Vinson syndrome, sprue, beriberi, coeliac disease in children, tropical avitaminosis, and other diseases. Perlèche manifestations in vitamin deficiency diseases have in rare instances been eradicated by nicotinic acid after failure with riboflavin, and in the cases reported by Smith and Martin by administrations of pyridoxine. Under the heading pseudoperlèche may well be included instances of contact dermatitis, seborrhoeic dermatitis, severe "chapping", herpes and so on.

#### The Phenol-Camphor Treatment of Dermatophytosis.

B. PHILLIPS (*The British Journal of Dermatology and Syphilis*, November and December, 1944) records the results of an investigation into the phenol-camphor treatment of dermatophytosis. The hands, feet, groins and axillae of 3,250 soldiers, and the hands and feet of 500 women of the Auxiliary Territorial Service, were examined. The only cases selected were those in which fungus could be demonstrated in the scrapings taken from the lesions. Equal quantities of pure phenol and pure camphor were placed in a mortar and triturated with a pestle until liquefied. The solution was then ready for use. Treatment of all patients was carried out in a uniform manner, and to avoid the possibility of water, even the slight amount from perspiration, coming into contact with the phenol-camphor, the patient was kept in bed, no bathing or washing of the affected areas was permitted, and before each treatment flakes of skin were removed and the affected area was swabbed dry with cotton wool. A warning was given that no water or moisture must be allowed to come in contact with phenol-camphor or severe burns might result. On application, phenol-camphor was found to be non-irritating except where fissures were present, in which case slight smarting occurred. Treatment was continued until all scales produced by the phenol-camphor had fallen off, leaving a smooth, non-irritated surface with no sign of an active or raised periphery. When patients were considered cured, they were discharged from hospital and returned to full duty. The treatment of any patient not cured by the ninth day of treatment was considered a "failure". During the first month of the experiment, the "safety-first" rules were strictly observed. As no untoward reactions were encountered when the parts were covered with clothing immediately after treatment, patients were later treated as outpatients. Out of 230 patients, only four showed any local reaction.

#### Dermatitis from Cutting Oils, Solvents and Dielectrics.

S. M. PECK (*The Journal of the American Medical Association*, May 20, 1944) states that dermatitis from cutting oils occurs more frequently than any other occupational disease of the skin. The eruption produced is usually acneiform, but sometimes it resembles

contact eczema. The lesions most frequently seen after exposure to cutting oils (usually the insoluble and rarely the soluble cutting oils) are folliculitis and comedones. The hairy portions of the arms and the anterior portions of the thighs are the sites of predilection. Lesions are also seen on the back of the hands and fingers and on the abdomen. Dermatitis is of frequent occurrence amongst persons exposed to solvents. Amongst the solvents are included the organic liquids which are used as cleansers in degreasing operations of various kinds, those used to extract oils, fats and wastes, the solvents for plastics, resin and rubber and those to dissolve varnishes, paints and lacquers. The solvents exert their drying effect on the skin by removing the fats and oils. This results not only in dryness, but in cracking of the skin. The hands, wrists and forearms are usually affected. Hypersensitivity may develop with the production of allergic dermatitis. The increased use of dielectrics in insulating wires and condensers, especially chloro compounds, has increased the incidence of so-called chloracne. The lesions of chloracne consist of pinhead-sized to pea-sized or even larger pale straw-coloured cysts. Comedones are present, but are not a striking feature. The cysts are located in the face and on the lobes of the ears, behind the ears and on the back of the neck and on the shoulders and the abdomen. Coal tar pitch is sometimes used as an insulating material. It may also cause acneiform lesions, but the lesions may be differentiated from chloracne by the accompanying melanosis and the presence of comedones rather than cysts as prominent features.

#### The Cause of Psoriasis.

A. E. GOLDFARB (*New York State Journal of Medicine*, May 15, 1944) discusses the theories of the causation of psoriasis which have received the widest credence. Five theories are discussed: hereditary, neurogenic, parietic, metabolic (blood fat and blood protein), diathetic (the arthritism of the French school). A relationship has been shown between psoriasis and injury and between injury and increases in capillary permeability. Citrin, so-called vitamin P, which decreases capillary permeability, has been used in the treatment of psoriasis with the following results. Of 45 patients treated, 30 have manifested improvement, 12 showed no change and three became worse. Of a group of 17 control sufferers from psoriasis under treatment with milk sugar given orally and petrolatum applied locally and treated at the same time, three manifested improvement, three showed no change and eleven became worse. The preparation of vitamin P used was citrin lemonade, made as follows: lemons of large size, six to eight ounces each, were cut in half and their juice was extracted. The remaining rinds were ground up in a meat-chopper and the resulting mash was placed in an enamel-lined kettle and covered with water. This mixture was allowed to stand at room temperature for twenty-four to thirty-six hours. It was then placed in a basket centrifuge, where the liquid was separated from the solid portion of the mixture. The liquid obtained in this way was then combined with lemon juice for palatability. Forty lemons prepared in this way usually

yielded a gallon of vitamin-containing concentrate. Four ounces were administered to the patients as a daily dose.

#### Complications following a Rapid Treatment of Scabies.

DE W. C. DAUGHTRY (*The Journal of the American Medical Association*, January 13, 1945) states that the value of benzyl benzoate in the treatment of scabies is without question, but previous writers have presented it as a preparation to be used indiscriminately without fear of untoward reactions. He has made observations which, as far as he is aware, have not previously been recorded. Benzyl benzoate is being used rather widely in the treatment of scabies amongst military personnel. The author used benzyl benzoate exclusively in the treatment of scabies for several months. The results on the whole were satisfactory. Many minor skin irritations of short duration were observed, but in four cases the reactions were classified as severe. The treatment carried out was essentially that described by previous writers. In one of the cases characterized by a severe reaction, the patient was awakened about twelve hours after the application of the treatment with an intense burning and itching, and he noticed a fine rash over the area where the benzyl benzoate preparation had been applied. The dermatitis had a typical scarlatiniform appearance; accompanying pruritus caused considerable discomfort for ten days. The author came to the conclusion that benzyl benzoate is a rapidly effective sarcopticide, but it should not be forgotten that troublesome local skin reactions do follow its use. Patients should be warned to discontinue treatment immediately if the rash and itching of scabies become worse.

### UROLOGY.

#### Treatment of Chyluria.

G. KAWAICHI AND R. W. BARNES (*Urologic and Cutaneous Review*, October, 1944) state that a recent survey of soldiers returning to the United States of America discloses a high incidence of tropical diseases, one of which is filariasis. In 1928 A. H. Wood published his treatment for chyluria, discovered accidentally by performing retrograde pyelography with a 15% solution of sodium iodide. In a case of chyluria treatment should be carried out early, and in the following way. Two glasses of equal parts of milk and cream are drunk by the patient one to two hours before cystoscopy, at which examination the unilaterality or bilaterality of the condition is determined. All residual urine is aspirated from the involved pelvis or pelves, and then a 15% solution of sodium iodide is slowly injected till the patient feels tension or slight pain. The injection may be repeated at intervals of one week, when both the concentration of the sodium iodide solution and the volume injected should be gradually increased. The retrograde pyelograms so secured may disclose pyelolymphatic back flow. One injection may effect a cure, but if there is a recurrence, the strength of the solution is increased to 20% or even to 25%. Six cases occurring among Oriental patients are described. It is important

that the ureteric catheter should be large, so that the injected solution does not flow back into the bladder, but fills the pelvis and the calyces. If there is no response from sodium iodide, silver nitrate is used in concentrations of from 1% to 3%.

#### Vitamin E in Male Sterility.

E. SHUTE (*Urologic and Cutaneous Review*, September, 1944) states that the first workers interested in vitamin E noticed the striking effect of a deficiency of this vitamin on the testes of rats and mice; they found a gradual atrophy of the spermatogenic epithelium, ending in complete absence of spermatogonia and spermatozoa. Moench was the first clinical investigator to claim that vitamin E was of value in restoring human spermatogenic function. In the past eleven years of the author's practice he persuaded only 27 men out of 67 suffering from suspected sterility or relative sterility to cooperate in semen examinations in association with vitamin E therapy. The author's method is to examine the semen after at least four days' abstinence from coitus. An ordinary smear will do, and elaborate sperm counts are not necessary. After two weeks' treatment the semen is re-examined. However, the author has noted patients who became "more effective sires" even though no sperm improvement was determined. A daily dose of ten milligrammes of  $\alpha$ -tocopherol in the form of "Ephymol" was given for two weeks. If this treatment produces no improvement, it is probably useless to continue the therapy. The effect of vitamin E is transient, and it is therefore necessary to maintain its administration till conception occurs. The author's results were as follows. Of the defective men tested before and after treatment, in 48% an increased number of sperms were found in the semen. Of the eighteen men who had only dead sperms before treatment, 67% had only live sperms after the fortnight's test. Of the sixteen men whose semen contained morphologically abnormal sperms, in 56% only normal forms were found after treatment. Of the sterile couples in this group, in 37% conception occurred so promptly that it was probably ascribable to the treatment.

#### Traumatic Rupture of the Urethra.

E. J. McCAGUE AND J. H. SEMANS (*The Journal of Urology*, July, 1944) discuss the statistics of twenty-seven years in the experience of a public hospital in Pittsburgh regarding rupture of the urethra and bladder complicating fracture of the pelvis. In this period, 780 patients with fracture of the bony pelvis were admitted to hospital, and of these fractures, 133, that is, 17%, were complicated by rupture of the bladder or urethra. Pittsburgh is an industrial community, where such accidents are not rare. Reduction in mortality in the cases of urinary tract injury depends on the following principles: (a) early and accurate diagnosis; (b) adequate treatment of surgical shock; (c) provision of suprapubic drainage for deviation; (d) open surgical drainage of all traumatized tissue, for example, in the perineum; (e) immobilization of the bony pelvis. Suprapubic operation should be performed as soon as the patient has responded to anti-shock measures. Instrumentation such as cystoscopy or

even simple passage of a catheter must be avoided, though the latter may be done after the bladder is opened. A catheter left *in situ* will often achieve complete restoration of urethral continuity. If this cannot be done, the perineum is opened, and primary suture is carried out if the patient's condition allows; otherwise simple perineal incision will suffice.

#### Carcinoma of the Renal Pelvis.

J. R. McDONALD AND J. T. PRIESTLEY (*The Journal of Urology*, March, 1944) have made a histological study of 75 specimens of carcinoma of the renal pelvis removed at the Mayo Clinic during a period of thirty-six years up to 1940. The authors think that those tumours which resemble benign papilloma of the bladder, even though they show no histological infiltration of the muscular layer of the pelvic wall, must be considered malignant. The most important reason for this cautious outlook is that the survival rate in such cases after nephrectomy or nephroureterectomy was only 52% after five years. Therefore, instead of calling this group of tumours by the name "papilloma", the authors call it "papillary carcinoma". The second group is called papillary carcinoma with infiltration. The third group is called infiltrative carcinoma. The last-mentioned group consists typically of transitional cells, but a certain number may show metaplasia towards a squamous-cell type of growth. The infiltrating growths have a graver prognosis than the papillary type, but only the upper third of the ureter need be removed unless the growth is of a papillary type. In the latter case, whether the papillary growth is infiltrating or not, the whole ureter must be removed with the kidney. Five years after operation 52% of patients in the papillary group were alive, 16% in the papillary with infiltration group, and only 7% in the infiltrative group. At histological study involvement of the renal veins or of perineural lymphatics in the renal hilum means a grave prognosis. Involvement of the ureter probably occurs by formation of multiple neoplastic growths, rather than by lymphatic spread or mucosal transplantation.

#### Uretero-Vesical Obstruction.

J. S. RITTER AND S. E. KRAMER (*Urologic and Cutaneous Review*, September, 1944) discuss particularly the type of obstruction at the lower end of the ureter where the intramural portion of the ureter is congenitally narrow but will allow a ureteric catheter to pass. The ureter is dilated, sometimes to a great extent, and this may extend to involve pelves and calyces as well. There may be an associated obstruction at the uretero-pelvic junction, with hydronephrosis. The latter obstruction will need the usual plastic procedure, with splinting and nephrostomy. The authors describe six of their own cases, and have come to the conclusion that the operation of dividing the ureter through its wide part above the narrowing, and of reimplanting it into the bladder, is likely to fail because of poor healing power of the atonic ureter and of interference with peristalsis by the suture. They advocate a transvesical open operation to perform an extension ureteric meatotomy. They close the bladder and drain this organ with a urethral catheter.

## British Medical Association News.

### ANNUAL MEETING.

THE annual meeting of the Tasmanian Branch of the British Medical Association was held at the Tasmanian Museum, Hobart, on February 24, 1945, Dr. B. HILLER, the President, in the chair.

#### Annual Report of the Council.

The annual report of the Council for the previous twelve months was read and adopted. The report is as follows.

The membership of the Branch, which was 106 on January 1, 1944, was 127 at the beginning of 1945. Ten new members were elected during the year, five members were transferred from other Branches, and sixteen resumed their membership through payment of an overdue subscription; while two have allowed their membership to lapse, six have been transferred to other Branches, and two have died.

Seven ordinary meetings of the Branch and three special meetings have been held since the last annual meeting. The average attendance at the ordinary meetings has been only 13.9, compared with 17.8 in the previous year.

A paper was presented by Dr. K. M. Kelly, and cases have been demonstrated by Dr. T. Butler, Dr. Muir, Dr. Rae, Dr. Kelly, Dr. Fay, Dr. Freeman, Dr. Duncan, Dr. Tremayne, Dr. Dunlop, Dr. Stretton and Dr. Millar.

The Branch is grateful to the Tasmanian branches of the Royal Australasian College of Physicians, the Royal Australasian College of Surgeons, and the Ophthalmological Society of Australia for inviting members to attend their clinical meetings.

Eleven meetings of the Branch Council have been held, the attendances being as follows: Dr. Hiller, 7; Dr. Crowther, 8; Dr. Clemons, 4; Dr. Brothers, 7; Dr. Fay, 8; Dr. Butler, 7; Dr. Reid, 8; Dr. Craig, 6; Dr. Millar, 8; Dr. Freemantle, 4; Dr. Walch, 11.

The Ethics Committee has consisted of Dr. Millar, Dr. Crowther, Dr. Reid, Dr. T. Butler, Dr. Craig, Dr. Fay, and the President and Secretary. One meeting of the committee has been held.

The Linen and Petrol Rationing Committee, consisting of Dr. Hiller, Dr. Duncombe and Dr. Walch, has continued to give attention to numerous applications from members.

The Branch has been represented on the Federal Council by Dr. J. S. Reid and Dr. C. Craig; Dr. W. P. Holman acted in place of Dr. Craig on one occasion. It has been a busy

year for the Federal Council and the Branch appreciates the work done by its representatives.

The Branch has also been represented on the Tasmanian Medical Coordination Committee by Colonel W. W. Giblin, and on the Federal Council's Contract Practice Committee by Dr. Rail Robertson.

In the medico-political field, the Commonwealth Government's proposals for a national medical service and for pharmacy benefits are outstanding among the very numerous matters which have been considered by the Branch Council. A special meeting of the Branch was held at Oatlands to decide on a policy in relation to national health, and the visit of Dr. J. G. Hunter for the purpose of discussing these matters was greatly appreciated.

In cooperation with the army authorities an itinerary and programme of lectures was arranged for the visit of Sir Howard Florey, who was entertained by members of the Branch Council during his stay in Tasmania.

The Branch has associated itself with a number of other scientific organizations in the formation of a Tasmanian Association of Scientific Societies. It is hoped that this may lead to some useful joint meetings and discussions with the other member societies.

#### Financial Statement.

The Honorary Treasurer presented the balance sheet and financial statement for the year. The statements, which are published herewith, were adopted.

#### Election of Office-Bearers.

The following office-bearers were elected for the ensuing twelve months.

*President-Elect:* Dr. P. H. Goddard.  
*Vice-President:* Dr. T. Giblin.  
*Honorary Treasurer:* Dr. J. P. Millar.  
*Honorary Secretary:* Dr. J. H. B. Walch.  
*Member of the Council:* Dr. W. P. Holman.  
*Auditors:* Messrs. Adams and Bennetto.

As insufficient nominations had been received, the President announced that there were two vacancies on the Council.<sup>1</sup>

#### Induction of President.

Dr. B. Hiller vacated the chair in favour of Dr. G. M. W. Clemons, who thanked the members for his election and expressed on behalf of the Branch appreciation of the work done by the retiring office-bearers.

### THE BRITISH MEDICAL ASSOCIATION (TASMANIAN BRANCH).

#### Statement of Receipts and Payments for the Year ended December 31, 1944.

RECEIPTS.				PAYMENTS.			
	£	s.	d.		£	s.	d.
To Balance brought forward .. .. .	475	8	5	By Federal Council—B.M.A. Capitation Fees ..	124	12	0
.. Members' Subscriptions .. .. .	512	14	6	.. Southern Division, B.M.A. .. .. .	29	10	0
.. Interest on Commonwealth Inscribed Stock ..	19	17	6	.. Northern Division, B.M.A. .. .. .	27	10	0
.. Interest on Debenture, Australasian Medical Publishing Company, Limited .. .. .	4	15	0	.. B.M.A., London .. .. .	150	9	0
.. Interest on Fixed Deposit at Hobart Savings Bank .. .. .	4	12	2	.. Australasian Medical Publishing Company, Limited .. .. .	104	0	0
				.. J. B. Walch—Honorarium .. .. .	30	0	0
				.. Adams and Bennetto—Audit Fee .. .. .	2	2	0
				.. Assistants' Fee, Postages <i>et cetera</i> .. .. .	57	17	2
				.. J. Walch and Sons—Stationery .. .. .	7	13	2
				.. Branch Council—B.M.A. .. .. .	10	0	0
				.. Bank Charges .. .. .	1	10	4
				.. Balance carried forward .. .. .	472	3	11
	£1,017	7	7				
					£1,017	7	7

#### Statement of Assets.

	£	s.	d.
Cash at Bank (including £22 14s. 11d., Commonwealth Loan Interest of National Emergency Fund) .. .. .	435	17	0
Hobart Savings Bank .. .. .	209	1	10
Commonwealth Inscribed Stock .. .. .	600	0	0
Australasian Medical Publishing Company, Limited—Debentures .. .. .	95	0	0
War Savings Certificates .. .. .	133	0	0
Furniture at Library .. .. .	20	0	0
	£1,492	18	10

Audited and found correct.

ADAMS AND BENNETTO,

Chartered Accountants (Aust.), Auditors.

#### Future Annual Meeting Arrangements.

It was resolved on the motion of Dr. J. B. Hamilton that in future the annual report and balance sheet should be circulated among members with the notice convening the annual meeting.

#### Medical Certification.

It was resolved that the problem of medical certification be referred to the Branch Council and discussed at the next ordinary meeting of the Branch.

#### Retiring President's Address.

The retiring President, Dr. B. Hiller, began his address by welcoming the incoming President, Dr. G. M. W. Clemons,

<sup>1</sup> Since the annual meeting, Dr. W. E. L. H. Crowther and Dr. B. Hiller have been elected to the Council.

## THE BRITISH MEDICAL ASSOCIATION (TASMANIAN BRANCH) NO. 2 ACCOUNT.

## NATIONAL HEALTH EMERGENCY FUND.

## Statement of Receipts and Payments for the Year ended December 31, 1944.

RECEIPTS.		PAYMENTS.	
	£ s. d.		£ s. d.
To Balance brought forward (Interest on Commonwealth Loan, 1942) .. .. .	14 5 11	By Balance carried down .. .. .	22 14 11
„ Interest on Commonwealth Loan .. .. .	8 9 0		
	£22 14 11		£22 14 11

These amounts of interest have been paid into the E., S. and A. Bank and form part of the balance shown in the pass book on December 31, 1944.

## Statement of Assets.

Australian Commonwealth Loan .. .. . £260 0 0

Audited and found correct.

ADAMS AND BENNETTO.

Chartered Accountants (Aust.), Auditors.

whose father, long and honourably associated with medicine in Tasmania, had held the office of President only ten years before. The new President might be assured that he would have the full confidence of his fellow members of the Branch. Dr. Hiller thanked the members of the Council for their never-failing support during his twelve months of office. He was grateful to Dr. W. E. L. H. Crowther for his ready assumption of the presidential duties during his (Dr. Hiller's) unavoidable absence, and to the honorary secretary, Dr. J. H. B. Walch, for his ever-willing assistance.

## Allergic Otitis Media and Mastoiditis.

Dr. Hiller then dealt with the subject of his address, allergic *otitis media* and mastoiditis.

He said that F. K. Hansel stated that, although allergic *otitis media* had been described, there was still some question as to whether or not the condition occurred, since among those cases reported eosinophile cells had not been noted in the aural discharge; but, as Marvin Jones remarked, clinical evidence indicated that the phenomenon of allergy did affect the Eustachian tube and the middle and internal ear, although scientific proof was lacking.

It was probable, according to A. W. Proetz, that no tissue of the body was free from specific reactions to substances foreign to the organism. Furthermore, it was characteristic of these reactions that they were not generally distributed, but remained localized, although not necessarily affecting the same location in each attack. This being the case, the symptomatology depended less upon the nature of the reaction than upon its location and the specific tissues involved.

Dr. Hiller pointed out that the literature at present yielded little. E. R. Lewis had reported six cases of acute *otitis media*, which he attributed to allergic influences, and his descriptions strongly indicated the soundness of his diagnosis. Lewis considered that there were certain characteristics of so-called acute serous *otitis media* which suggested the absence of an infectious aetiology; and, even more strongly, suggested allergic aetiology. It seemed probable, also, that many cases of acute *otitis media* originated as allergic and subsequently became infective as the result of the action of secondary bacterial activities.

Proetz stated that more prevalent than one would imagine, unless it was particularly looked for, was an oedema of the tympanum, including the *membrana tympani*, resulting from the ingestion of some foreign protein to which the patient was sensitive. The symptomatology was exactly that which might be expected of such an oedema, in the absence of infection, in structures confined in bony tympanic walls.

Marvin Jones considered that the extreme likelihood that allergic reactions involved the mucous membrane of the Eustachian tube and tympanic cavity, as well as the nasal mucous membrane, had hardly received the consideration which such a plausible process suggested.

M. Levine had pointed out that, in the middle ear, localized allergic reactions might simulate other ear diseases by the mechanical effect of oedema on the tissues of the tympanic cavity, and that they might be recognized by the type of onset and other accompanying allergic manifestations.

L. W. Dean stated that allergic patients often complained of a feeling of "stiffness" or fullness in the ears, with or without noticeable decrease in hearing. More commonly this

was due to oedema of the Eustachian tube accompanying allergic rhinitis. When the tubes were catheterized, material might be secured from the tube for cytological study. Dean had found a great increase in eosinophile cells often near the pharyngeal end of the tube. He had not found this increase in eosinophile cells at the tympanic end of the tube. The pharyngeal tubal cushion was usually very much swollen and oedematous in allergic rhinitis. So far as he knew, biopsy had never been taken from the pharyngeal end of the tube in this type of condition and consequently the histological appearance of the tissue was not known. Sometimes the blocking of the tubes became so marked that acute *otitis media* developed. With an oedematous tubal cushion it was only reasonable to suspect that there would be a blockage of the tube with resulting changes in the tympanic cavity. In Dean's experience, there were more cases of acute *otitis media* complicating the perennial type of allergic rhinitis during inclement weather. That was the period during which most cases of acute infectious *otitis media* were seen. Nevertheless, it had still to be borne in mind that it was very probable that the tympanic cavity might be primarily involved in the allergic process simultaneously with the pharyngeal end of the Eustachian tube, as there might be profuse watery discharge from the tympanum following myringotomy. Nor was it strange that this should be so, since the Eustachian tube, which might furnish the only egress for fluid, would be effectively blocked by the same process.

Marvin Jones was of the opinion that the fluid aspirated from the tympanic cavity seemed the same as nasal secretion caused by allergic attacks. However, Jones had not reported the results of the cytological study of this discharge secured on myringotomy. So far all attempts to demonstrate eosinophile cells in the discharge had failed, and Hansel and Dean asserted that it was quite impossible to make a diagnosis of allergic *otitis media* without an increase of eosinophile cells in the ear discharge being found.

According to Proetz, the outstanding signs were sudden severe pain, transient in character, that subsided spontaneously, as did an angioneurotic oedema elsewhere in the body; and the reduction of hearing attendant upon mechanical damping of the conduction apparatus.

The history, as stated, was ordinarily that of intense pain, roaring and partial deafness in one or both ears, coming on suddenly after exposure to, or ingestion of, some foreign protein. The drum was red and swollen, but had not the typical convexity of the bulging drum of infective *otitis media*. Often the oedematous epithelium gave it a whitish cast or bloom. On incision, there was a sensation of cutting into a spongy structure and not a taut membrane. A drop of blood or of serum appeared and the incision healed promptly without suppuration unless secondary infection intervened. An afebrile course was the rule. On the other hand, Lewis stated that in his cases there occurred very early spontaneous serous discharge which ceased completely in from thirty-six to seventy-two hours with prompt closure of perforation and restoration of hearing.

Proetz continued that the diagnosis was made upon the appearance of the drumhead and upon the allergic history of the individual. The importance of this history, apart from the skin reactions, should be stressed, as the latter might be absent. Proetz further cited in detail a case in which apparently nothing was to be gained by incision of the drumhead, as the condition subsided when the allergic crisis was relieved, and there was no infective material to liberate. The repeated incisions which were prompted by the continuation of pain were sure to be followed by infection, and the resulting purulent *otitis media* continued after the cessation of the allergic attacks. Dr. Hiller said that it was difficult to say where to draw the line in allergic individuals between allergic and infective *otitis media*. The best

indicators were probably the temperature, the general appearance of the patient, and the presence or absence of eosinophilia.

Dr. Hiller then described the history of a female patient, C.N., aged fourteen years, who had been referred to him in December, 1941, with the history of recurrent attacks for several months of marked "stiffness" of the nose, sneezing, rhinorrhoea, crusting and dermatitis around the anterior nares, conjunctivitis and lachrymation. The patient had also had periodical attacks of very severe urticaria. She was unable to give any indication as to probable or possible substances to which she was sensitive, with perhaps the exception of ivy which was growing on the walls of her home, into which the family had moved some twelve months previously.

On examination, her intranasal appearances were of the typical allergic rhinitis type, and there was some secondary dermatitis within both nasal vestibules. Tests for allergy were then carried out, including an ivy "patch" test, and all gave negative results with the exception of one intracutaneous test with mixed staphylococcus vaccine (Commonwealth Serum Laboratories), to which she had a "7 or 8 plus" positive reaction including swelling of the eyelids and the nose. She was then given half a grain of ephedrine four times a day, and a desensitizing course of mixed staphylococcus vaccine was advised. Her physician pronounced her general condition otherwise quite normal.

The patient did not reappear until July 8, 1942, when it was with the request from her physician that she should be given the desensitizing course of vaccine injections because she had just had more frequent and more severe recurrences. She was started off on 0.02 cubic centimetre of "A" strength Commonwealth Serum Laboratories mixed staphylococcus vaccine (five million organisms), but this produced a severe reaction and it was gradually found that the largest dose she could tolerate was 0.0025 cubic centimetre (600,000 organisms). On August 4 she was given 0.004 cubic centimetre (one million organisms), and Dr. Hiller did not see her again until August 13, when she complained of having had, for several days, a further severe attack of the facial and nasal allergic conditions with slight otalgia and slight elevation of temperature, culminating the previous night in very severe pain in the right ear, but otherwise no evidence of an acute upper respiratory tract infection.

On examination the patient presented a most pathetic spectacle with swollen eyelids, cheeks, nose and lips and much dermatitis around the nares and lips. The right *membrana tympani* was very injected and bulging, and some general mastoid tenderness was present. Her temperature was 100.8° F. She was immediately admitted to hospital and the drum was incised with resultant release of a large amount of serous fluid. She was put on half a grain of ephedrine *per os* every four hours and adrenaline two minims hypodermically every two hours. These measures were quickly successful in controlling her facial and nasal conditions, but her pyrexia, 99° to 103° F., persisted and the aural discharge remained serous and most amazingly profuse. By August 18 there was marked tenderness over the whole mastoid, and at the cortical mastoid operation, extensive involvement of bone including a large area of the sinus plate was found. She made an uninterrupted recovery, the ephedrine (*per os*) and adrenaline injections being continued throughout her stay in hospital.

On October 3 the patient presented herself again with a similar but milder condition in the left (other) ear. Her temperature was 100.2° F., and again she had the usual allergic nasal and facial condition and with no symptoms of upper respiratory tract infection. Myringotomy was performed with liberation of a fair amount of serous fluid; that ear cleared up completely within six days under the usual treatment combined with ephedrine and adrenaline. The vaccine injections were immediately resumed (which was after a lapse of six weeks), and by the end of December she was able to tolerate a dose of 0.015 cubic centimetre (four million organisms). Then, for geographical reasons, Dr. Hiller reluctantly consented to have a neighbouring nurse instructed in the technique of giving the injections.

The patient, therefore, was not seen again until July 22, 1943 (seven months later), with an exactly similar recurrence of the left aural condition and accompaniments; her temperature was 99.8° F. Myringotomy was again performed and the condition quickly cleared up. It was then ascertained that she had recently been having severe reactions after every injection, the dosage of the last one, three days previously, having been 0.4 cubic centimetre of "A" strength (100 million organisms)—obviously very much too large.

A month later, on August 21, and before her correct dosage could be ascertained, there was a still further similar

recurrence and a left myringotomy was performed, being followed by a quick resolution.

Dr. Hiller said that owing to the previous experience with the mastoiditis, and the fact that the allergen was an organism, he would not have been justified in withholding the myringotomy in these three attacks of *otitis media* on the left side.

Ever since then the patient had been attending regularly for her injections, and, since March, 1944, her dosage of vaccine had become stabilized at 0.08 cubic centimetre of "A" strength (twenty million organisms) every ten days, and she had had no further recurrences. But, if she was given slightly more or slightly less than 0.08 cubic centimetre, or allowed to go for more than ten days, recurrence of rhinitis and oedema of eyes and nose resulted. The question arose when and how her treatment would ever be completed and it still greatly exercised his mind.

During August, 1944, the vaccine injections were gradually diminished and then ceased, and simultaneously slowly increasing small doses of the dilute preparation of staphylococcus toxoid had been substituted. Her dosage at present was 0.09 cubic centimetre, once a fortnight, but again, if dosage was varied or if the interval was more than two weeks, there was a recurrence; but otherwise the patient had remained free of all symptoms. The perforation of the drum had persisted and it was interesting to note that, whenever the facial and nasal allergic symptoms returned, the aural discharge also recurred. Carbohydrates in the diet had been reduced and the patient had taken several courses of yeast.

Eosinophile cells were never discovered in the aural discharges, but neutrophile cells and staphylococci were always present.

In discussing this case, Dr. Hiller said that, as stated before, Hansel and Dean considered that *otitis media* should not be classified as allergic until eosinophile cells were found in the discharge—and there was no record of this ever having been done in his case. However, H. A. Kuhn and L. D. Linton had stated that even in extremely sensitive individuals with allergic rhinitis, eosinophile cells might not appear in the nasal smear, and that search for these, while recommended, was not reliable unless extended over a period of time. Moreover, Hansel had pointed out that in the case of a coryza superimposed on allergic rhinitis, the neutrophile cells completely dominated the picture and the eosinophile cells might be entirely absent, but later gradually returned as the "cold" subsided, and the neutrophile cells disappeared. Similarly, in the case of acute *otitis media* or acute mastoiditis of bacterial allergic origin, neutrophile cells would be expected to be plentiful; it would be extremely unlikely that eosinophile cells would be discovered in the aural discharge.

In the case of the patient under discussion, it would appear to be impossible to be quite dogmatic as to whether (a) the middle ear became involved secondarily to allergic obstruction of the Eustachian tube, or (b) it became primarily involved concurrently with that passage.

Particularly in considering the occasion of the mastoiditis, it was very difficult to differentiate between the allergic and the infective processes, as they were, of course, so very interdependent; but there would certainly appear to have been a very large local allergic element in all four attacks, whether brought about primarily or secondarily. Dr. Hiller enumerated the significant features of his case as follows.

1. On all four occasions on which the ears had been affected, the allergic condition was not under any, or not under proper, control (on one occasion the result of too liberal dosage of vaccine).
2. The discharge had always been serous in nature and never purulent.
3. On the occasion of the mastoiditis, the serous discharge had continued so extraordinarily copiously that it would seem that a simple mastoiditis alone could not have been responsible, and that there had been an active allergic process present as well. Similarly, the amount had been unusually large when myringotomy was performed for the three attacks of *otitis media*.
4. A further point of significance (although not necessarily so) was the unusually mild degree of pyrexia on these last three occasions and at the onset of the first occasion.
5. Angioneurotic oedema of the face and allergic rhinitis had always both preceded and accompanied the aural involvement.
6. There had never been any suggestion of the presence of an upper respiratory tract infection.
7. Since the patient's allergy had been kept under control, there had been no further aural troubles.

8. When the middle ear only was involved, the condition quickly cleared up after myringotomy, followed by adrenaline injections, but with bony involvement (mastoiditis) more radical procedures had become necessary.

When these facts were taken into consideration, the assumption that the acute *otitis media* attacks and perhaps the mastoiditis were truly allergic in nature, or at the least highly involved in such a process, appeared to be justified.

## Correspondence.

### OVERCROWDING OF THE MEDICAL FACULTY IN THE UNIVERSITY OF SYDNEY.

SIR: We should all be deeply indebted to Professor Burkitt for his forthright expression of opinion on the above subject, and it is no disagreement with his excellent letter to point out just one direction in which the authorities could materially extend the present training of medical students and mitigate to some extent the evils of overcrowding; I refer to orthopaedics including fractures.

There are a number of orthopaedic clinics at hospitals other than the present teaching hospitals which could take a number of the students and give them a training quite up to the present standard. It may be noted that the same position has been well ventilated in regard to the London County Council hospitals in England.

Yours, etc.,

C. C. McKELLAR.

143, Macquarie Street,  
Sydney,  
May 10, 1945.

## Post-Graduate Work.

### COURSE IN OBSTETRICS AT MELBOURNE.

The Melbourne Permanent Post-Graduate Committee announces that the following demonstrations in obstetrics will be given at the Women's Hospital, Melbourne, from June 11 to 20, 1945. The fee for this course is £5 5s. and residence is £3 3s. per week. Entries should be in the hands of the Secretary, Royal Australasian College of Surgeons Building, Spring Street, Melbourne, C.1, by May 28.

#### First Week.

**Monday.**—Morning: "Pathology", by Dr. H. F. Bettinger. Afternoon: "Sterility", by Dr. W. W. S. Johnston; "Sepsis", by Dr. A. M. Hill.

**Tuesday.**—Morning: "Antenatal Supervision", by Dr. G. Simpson. Afternoon: "Induction of Labour", by Dr. R. McK. Rome; "Bacteriology", by Miss H. M. Butler.

**Wednesday.**—Morning: "Ante-Partum Haemorrhage", by Dr. W. D. Saltau. Afternoon: "Septic Cases", by Dr. J. A. H. Sherwin; "Gynaecological Problems", by Dr. John Green.

**Thursday.**—Morning: "Pelvic Anatomy", by Dr. W. G. H. Cusaden. Afternoon: "Retroversion", by Dr. G. B. Bearham; "Renal Function Tests", by Dr. Vera Krieger.

**Friday.**—Morning: "Normal and Abnormal Labour", by Dr. W. I. Hayes; "Contracted Pelvis", by Dr. F. E. T. True. Afternoon: "Fibroid Tumours", by Dr. W. M. Lemmon; "Forceps Delivery", by Dr. A. M. Wilson.

#### Second Week.

**Monday.**—Morning: "Pathology", by Dr. H. F. Bettinger. Afternoon: "Endocrines", by Dr. W. W. S. Johnston; "Sepsis", by Dr. A. M. Hill.

**Tuesday.**—Morning: "Antenatal Supervision", by Dr. G. Simpson. Afternoon: "Ectopic Pregnancy", by Dr. R. McK. Rome; "Bacteriology", by Miss H. M. Butler.

**Wednesday.**—Morning: "Toxæmia", by Dr. W. D. Saltau. Afternoon: "Septic Cases", by Dr. J. A. H. Sherwin; "Treatment of Prolapse", by Dr. A. W. Harley.

**Thursday.**—Morning: "X-Ray Examination", by Dr. C. Macdonald; "Radium Treatment", by Dr. W. G. H. Cusaden. Afternoon: "Vaginal Discharges", by Dr. G. B. Bearham; "The Rh Factor", by Dr. Vera Krieger.

**Friday.**—Morning: "Caesarean Section", by Dr. W. I. Hayes; "Contracted Pelvis", by Dr. F. E. T. True. Afternoon: "Endometriosis", by Dr. W. M. Lemmon; "Breech Presentation", by Dr. A. M. Wilson.

### WEEK-END COURSE AT TAMWORTH.

The New South Wales Post-Graduate Committee in Medicine announces that, in conjunction with the Northern District Medical Association, it will hold a week-end course at Tamworth on Saturday and Sunday, June 16 and 17, 1945. The programme is as follows.

**Saturday, June 16, 1945.**

*At Presbyterian School Hall, Marius Street, opposite Ambulance Station.*

2-3 p.m.—"Dermatitis and Eczema": Surgeon Commander Gwynne Thomas, R.N.V.R.

3-4 p.m.—"Coma: Its Diagnosis and Treatment": Dr. C. G. McDonald.

4.30-5.30 p.m.—"Penicillin and its Administration in Private Practice": Dr. V. M. Coppleson.

*At Presbyterian School Hall.*

8 p.m.—Film demonstration.

**Sunday, June 17, 1945.**

*At Town Hall, Tamworth.*

9.30-10.30 a.m.—"Diagnosis of Epigastric Severe Pain": Dr. C. G. McDonald.

11-12 noon—"Common Rectal Conditions": Dr. V. M. Coppleson.

12-1 p.m.—"Mycotic Diseases": Surgeon Commander Gwynne Thomas, R.N.V.R.

The fee for the course will be £1 1s., except for members of the defence forces, who may attend the course without fee. Those intending to be present at the course are requested to notify Dr. E. B. Fitzpatrick, 448, Peel Street, Tamworth, as soon as possible.

### LECTURE ON PENICILLIN AT SYDNEY.

The New South Wales Post-Graduate Committee in Medicine desires to announce that Major P. L. Bazeley, O.B.E., will give a lecture entitled "Recent Developments in the Use of Penicillin in Great Britain and the United States", at the Stawell Hall, 145, Macquarie Street, Sydney, at 4.30 o'clock p.m. on Monday, May 28, 1945. All civilian medical practitioners and service medical officers are invited to attend.

## Naval, Military and Air Force.

### CASUALTIES.

ACCORDING to the casualty list received on May 16, 1945, Captain N. G. Hoddle has been accidentally wounded and placed on the "dangerously ill" list. Captain W. R. Davison, previously reported "prisoner of war", is now reported "recovered". Lieutenant-Colonel L. E. Le Souef, previously reported "prisoner of war", is now reported "not prisoner of war".

## Notice.

THE Section of Sociological Medicine of the New South Wales Branch of the British Medical Association will hold a meeting on Wednesday, June 6, 1945, in the William H. Crago Council Chamber at 8.30 o'clock p.m. Dr. Catherine Schofield will read a paper entitled "Medical Almoning: Its Scope and Possibilities".

## Obituary.

### ALAN ROBERT EAST.

WE regret to announce the death of Dr. Alan Robert East, which occurred on May 13, 1945, at Logan Road, South Brisbane.

### HENRY TALBOT HAMILTON.

WE regret to announce the death of Dr. Henry Talbot Hamilton, which occurred on May 9, 1945, at Clifton Hill, Victoria.

### JOHN THOMAS MURPHY.

WE regret to announce the death of Dr. John Thomas Murphy, which occurred on April 28, 1945, at Kew, Victoria.

### FRANCIS PERCIVAL SANDES.

WE regret to announce the death of Dr. Francis Percival Sandes, which occurred on May 16, 1945, at Edgecliff, New South Wales.

## Medical Appointments.

Dr. Keith Lindsay Hugh Kirkland has been appointed a government representative on the Board of Directors of Sydney Hospital.

## Books Received.

"Medicine for Nurses", by W. Gordon Sears, M.D. (London), M.R.C.P. (London); Fourth Edition; 1945. London: Edward Arnold and Company. 7½" x 5", pp. 462, with 67 illustrations. Price: 10s. net.

"Exercises in Human Physiology" (Preparatory to Clinical Work), by Sir Thomas Lewis, C.B.E., F.R.S., M.D., D.S.C., LL.D., F.R.C.P.; 1945. London: MacMillan and Company Limited. 7½" x 5½", pp. 119, with 8 illustrations. Price: 3s. 6d. net.

"Illustrations of Bandaging and First-Aid", compiled by Lois Oakes, S.R.N., D.N. (Leeds and London); Third Edition; 1944. Edinburgh: E. and S. Livingstone Limited. 8½" x 5½", pp. 283, with many illustrations. Price: 6s. net.

"The Student's Pocket Prescriber and Guide to Prescription Writing", by David Mitchell MacDonald, M.D., D.P.H., F.R.C.P.E.; Twelfth Edition; 1945. Edinburgh: E. and S. Livingstone Limited. 4" x 2½", pp. 368. Price: 4s. net.

"A Synopsis of Medicine", by Sir Henry Letheby Tidy, K.B.E., M.A., M.D., B.Ch. (Oxon.), F.R.C.P. (London); Eighth Edition, revised and enlarged; 1945. London: John Wright and Sons, Limited. 7½" x 4½", pp. 1235. Price: 30s.

"The Fœtal Circulation and Cardiovascular System and the Changes that they Undergo at Birth", by Alfred E. Barclay, O.B.E., D.M., F.F.R., F.A.C.R., Kenneth J. Franklin, D.M., F.R.C.P., and Marjorie M. L. Prichard, M.A.; 1944. Oxford: Blackwell Scientific Publications, Limited. 9½" x 7", pp. 390, with many illustrations. Price: 50s. net.

"Ophthalmic Nursing", by Maurice H. Whiting, O.B.E., M.A., M.B., B.Ch. (Cantab.), F.R.C.S.; Fourth Edition; 1945. London: J. and A. Churchill Limited. 7½" x 5", pp. 143, with 56 illustrations. Price: 6s. 6d.

"Neuro-ophthalmology", by Donald J. Lyle, B.S., M.D., F.A.C.S.; 1945. Springfield: Charles C. Thomas. 10" x 6½", pp. 415, with 234 illustrations. Price: \$10.50.

"Poet Physicians: An Anthology of Medical Poetry written by Physicians", compiled by Mary Lou McDonough, 1945. Springfield: Charles C. Thomas; London: Baillière, Tindall and Cox. 10½" x 6½", pp. 228. Price: 5.00, post paid.

"Pulmonary Tuberculosis: A Handbook for Students and Practitioners", by R. Y. Keers, M.C. (Edin.), F.R.F.P.S. (Glas.), and B. G. Rigden, M.R.C.S. (Eng.), L.R.C.P. (Lond.), with a Foreword by F. H. Young, O.B.E., M.D. (Camb), F.R.C.P. (Lond.), D.P.H.; 1945. Edinburgh: E. and S. Livingstone Limited. 7½" x 5", pp. 290, with 125 illustrations. Price: 17s. 6d. net.

## Diary for the Month.

- MAY 22.—New South Wales Branch, B.M.A.: Ethics Committee.  
 MAY 23.—Victorian Branch, B.M.A.: Council Meeting.  
 MAY 24.—New South Wales Branch, B.M.A.: Clinical Meeting.  
 MAY 25.—Queensland Branch, B.M.A.: Council Meeting.  
 MAY 31.—New South Wales Branch, B.M.A.: Branch Meeting.  
 MAY 31.—South Australian Branch, B.M.A.: Scientific Meeting.  
 JUNE 1.—Queensland Branch, B.M.A.: Branch Meeting (Joseph Bancroft Memorial Lecture).  
 JUNE 5.—New South Wales Branch, B.M.A.: Organization and Science Committee.  
 JUNE 6.—Victorian Branch, B.M.A.: Branch Meeting.  
 JUNE 6.—Western Australian Branch, B.M.A.: Council Meeting.  
 JUNE 7.—South Australian Branch, B.M.A.: Council Meeting.  
 JUNE 7.—New South Wales Branch, B.M.A.: Special Groups Committee.  
 JUNE 8.—Queensland Branch, B.M.A.: Council Meeting.  
 JUNE 12.—New South Wales Branch, B.M.A.: Executive and Finance Committee.  
 JUNE 12.—Tasmanian Branch, B.M.A.: Ordinary Meeting.  
 JUNE 18.—Victorian Branch, B.M.A.: Hospital Subcommittee.  
 JUNE 18.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.  
 JUNE 19.—Victorian Branch, B.M.A.: Organization Subcommittee.

## Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

**New South Wales Branch** (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

**Victorian Branch** (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

**Queensland Branch** (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL, or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

**South Australian Branch** (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

**Western Australian Branch** (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

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